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Faculty of Education

Division of Educational Psychology

A PROPOSAL FOR SCHOOL GUIDANCE UTILIZATION OF CHILDREN'S DRAWINGS

A Thesis

Submitted to the Faculty of Graduate Studies

In Partial Fulfilment of the Requirements for the Degree

of Master of Education

By

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Edmonton, Alberta

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University of Alberta

Faculty of Graduate Studies

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled A Proposal for School Guidance Utilization of Children's Drawings, submitted by Stanley Bertram Whitbread, in partial fulfilment of the requirements for the degree of Master of Education.

ABSTRACT

A new version of the Goodenough-Machover Draw-A-Person test is rendered in the light of criticism of the related literature to create the Whitbread Draw-Others-With-Self (D-O-W-S) test. Five measures are taken by means of the D-O-W-S test and validated: Drawn Adjustment, Drawn Aggression, Drawn Anxiety, Drawn Paranoid State, Drawn Self-acceptance, and Drawn Head Sizes. Validation involves comparisons with regard to these measures of two pairs of samples, the Delinquent Sample (N = 25) and Non-delinquent Sample (N = 25), and the Troubled Adjustment Sample (N = 46) and Normal Adjustment Sample (N = 105). The statistical test employed is the Kolmogorov-Smirnov two-sample test.

The samples are examined for the goodness-of-match of the Delinquent Sample and the Non-delinquent Sample, the representativeness of the Non-delinquent Sample in the Junior High School Sample (N = 151), and the loss of heterogeneity of the Junior High School Sample because of the disqualification of subjects.

The existence of contaminating influences in drawing performance is examined by comparing samples from four grade levels for a drawing development influence, by comparing samples from two schools for the influence of socio-economic differences, by comparing three pairs of girls' and boys' samples for sex-difference influence, and by inferring from sample differences and intercorrelations of measures about the influence of intelligence.

Relationships among the measures of the D-O-W-S test and the measure intelligence are examined by obtaining Spearman rank correlation coefficients.

The results validate four of the D-O-W-S test measures, which are

recommended for use in the diagnosis of group levels of adjustment. The test is found to be suitable for administration and scoring by persons who are relatively untrained in psychology and administrable to groups or individuals in usual situations.

The D-O-W-S test is not found to be efficient enough in differentiating the samples to recommend itself for individual diagnosis. The rate of disqualification of subjects, while it did not contaminate the samples, is found to be too high for a practical application of the test in a school guidance program.

The samples are found to have been selected without bias. The D-O-W-S test measures are found to exhibit no clear evidence of contaminating influences.

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CHAPTER I

THE PROBLEM

Psychodiagnosis from pencil drawings of human figures has been examined in a number of research studies reported in American psychological journals and several texts on projective techniques. Although several versions of such drawings tests have been proposed, no previous writer has collected the related opinion and research findings of the literature and then developed an instrument incorporating this criticism. Only a few writers have linked this diagnostic technique with use in school guidance, although some features of the technique appear to make it highly suitable. A study which examined the drawing characteristics of delinquent children was not found.

Statement of the problem. The purposes of this study are: (1) to construct the Whitbread Draw-Others-With-Self test[1], incorporating the discussion and research of the literature relating to the Goodenough-Machover Draw-A-Person test[2] and other diagnostic drawing tests; (2) to validate each of the measures taken by means of the D-O-W-S test against the separate criteria of the assumed psychological differences between delinquent children and non-delinquent children, and the assumed psychological differences between children who are judged by their teachers as troubled in adjustment and children who are judged by their teachers as normal in adjustment; (3) to examine the results of testing the samples with the D-O-W-S test for evidence of contaminating influences upon such

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[1]Hereinafter called the D-O-W-S test.

[2]Hereinafter called the D-A-P test.

diagnostic drawing tests.

Importance of the present study. There has not been developed a technique which is both effective in detecting emotional maladjustment in children and suitable for use in the typical school guidance program. Yet, the fulfilment by the school of its responsibility in helping children with maladjustments, and perhaps thereby reducing the incidence of mental disease and delinquency in society, necessitates accurate and early identification of children who are troubled in their adjustments.

Application for this purpose of the psychodiagnostic techniques presently available is seriously limited. Observation and referral by the teachers, a usual method of identifying maladjusted children, is susceptible to subjective error unless, exceptionally, the staff is well trained in, and oriented to, psychology. The information contained in the typical school records is not complete enough for other than sketchy inference about the children. The sociometric technique yields only crude inferences about individual group members. Most written and oral psychodiagnostic techniques rest on the assumption that the subjects have consistent and adequate verbal ability. This is not realistic when testing children whose reading and language abilities are not developed to the extent that words are fully understood or fluently expressed. Moreover, many of these techniques have the weaknesses of being susceptible to defensive reaction contamination and of being prohibitively expensive by requiring the services of highly trained personnel and administration on an individual basis.

One of the projective techniques, the D-A-P test, appears to avoid many of these limitations. It is largely non-verbal, its purpose is

not obvious, it is administrable to groups, and it is able to be scored empirically by persons relatively untrained in psychology.

However, the D-A-P test in its original form has design weaknesses. Many of the indices[1] conceived by Machover and others have been shown by research to be invalid; the D-A-P test makes several questionable assumptions in asking a subject to "draw a person." The D-O-W-S test, incorporating only the indices which have been shown to have some validity and being modified to avoid the doubtful assumptions of the D-A-P test, is proposed as a potentially useful psychodiagnostic instrument.

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[1]Index is employed in the present study to denote a characteristic of drawings taken as psychologically significant. It includes both sign--an isolated detail which is finite in its presentation, e.g. teeth--and formal element--a detail which has to do with organization or emphasis, e.g. left placement of a figure. For the latter term some of the literature uses graphomotor element and structural sign.

CHAPTER II

RELATED LITERATURE AND THEORETICAL FOUNDATIONS

From the 1880's to the present day, writers from the fields of psychology, psychiatry, and education have presented psychological interpretations of child and adult art. Although studies have been made upon a variety of subject matter presented in a variety of media, the following survey is limited to literature which has been concerned with the psychology of pencil drawings of human figures.

A. Origins and Versions of Psychodiagnosis with Drawings

According to Goodenough (1926), Ebenezer Cooke with his 1885 article in the London Journal of Education, "Art Teaching and Child Nature," pioneered this field. Barnes (1893)was apparently the first on this continent to study drawings psychodiagnostically. Typical of the exploratory studies which followed was that of Zesbaugh (1934) which sought to determine the sequence in which details appear in children's drawings of human figures. On the basis of an estimation of the developmental sequence in drawings, Goodenough (1926) proposed her D-A-P test for the measurement of intelligence from the drawing of a human figure.

The implications of differences in intelligence as rated by the D-A-P test and as rated by more established techniques led to the investigation for evidence of psychopathology in drawings. Although a number of writers, of whom Schmidl-Waehner (1942) is typical, made diagnostic descriptions of drawings, the first diagnostic systems did not appear until after 1948.

Machover (1949), probably the most influential in stimulating interest in this subject, reported several years of observation in

using the D-A-P test, and tendered around 260 indices of psychopathology. Machover's method was to present her subjects with the regular D-A-P test, then interpret the drawings according to psychological categories on the basis of what she considered bizarre details. Much of the research that has been done since 1949 on the psychology of art has been concerned with testing Machover's proposals.

Buck (1948), probably inspired by similar European drawing tests, brought out his House-Tree-Person test[1] for personality diagnosis and the measurement of intelligence. Buck required that his subjects draw a house, a tree, then a person, and considered each drawing as a representation of the subject by himself. The typical interpretation of the test seems to concentrate its diagnostic attention on the tree drawing, giving less importance to the other shapes.

While both Machover's and Buck's insights were based upon many clinical observations, the validity of the insights seems often to have been assumed. Because acceptable experimental procedures were absent, subjective evaluation and selective reporting undoubtedly occurred. However, neither of these clinicians expected that their systems would be used in blind diagnosis, but rather that they would serve as adjuncts to considerable previous knowledge about the subjects.

Introducing the multi-figure test, Royal (1949) required his subjects to draw first a "person" and then a "person of the opposite sex to the first person." As well as extensively testing some of Machover's claims, Royal in his study drew some conclusions in regard

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[1]Hereinafter called the H-T-P test.

to the interrelationships of the drawn figures. Levy (1950) administered a similar type of test, asking that a third "person" be drawn that was of the same sex as the subject; thereby claiming to be able to make inferences about three-way relationships in the subject's life. Caligor (1951) developed a version which started with the single D-A-P test instructions and then required seven copies of that figure. This Eight-Card-Redrawing-Test employs a pad of transparent paper with an opaque interleaf so that only the last drawn figure can be observed in each drawing-copying operation. In his subsequent studies (1952 and 1953), Caligor claimed that his test was able more effectively than the D-A-P test to detect the unconscious male-female identification of subjects, and to judge the degree of paranoia that subjects possessed.

Hulse (1952) asked his subjects to "draw your family" and from the drawings made some observations about the subject's relations with his family. Hare and Hare (1956) asked their subjects to draw a group. The instructions were:

> Think of the children you like to play with most on the playground. Now think of the thing you like to do best with this group of children. Then draw a picture of your group doing the thing you like to do best. When you are through, we will write down what is going on in your picture.

From the drawings, inferences about the subject's status in his group were made with some success.

Ponzo (1957) asked his subjects to "draw a person as an idiot would." Although the expected lowered inhibition during the drawing task appears to have occurred, Ponzo recognized the difficulties in his subjects' ambiguous interpretations of the word idiot and the tendency for subjects to produce stereotyped drawings.

The appearance of these modifications upon the form of the original D-A-P test indicates that there was recognition by the authors that the D-A-P test had limitations in its design. The writer acknowledges the criticism apparent in the design of these versions and follows their lead in the design of the D-O-W-S test.

B. Interpretative Methods in Psychodiagnosis with Drawings

The existence of disagreement over methodology in diagnosis with drawings is not surprising in a subject area which concerns experimental psychologists, clinical psychologists, and psychiatrists. Three areas of conflict were noted.

1. Blind judgments versus judgments-in-context. The traditional arguments of objective and subjective diagnostic methods were raised. The writer chose to follow the experimentalists' view, favoring blind judgments as the best heuristic method. All of the research studies used blind judgments.

2. Global approach versus the detail approach. It appears that many clinical psychologists favor making a judgment about the subject's psychological state from his drawings seen in totality. Other psychodiagnosticians using drawings prefer giving attention to details to which psychological significance can be attached. While most experimental studies have been destructive of the validity of the global approach, one study gave it support. Albee and Hamlin (1949) had fifteen clinical psychologists rate as better adjusted or not the drawings by ten psychiatric patients, arranged in forty-five pairs. The authors found that the reliability among the judges was .98, significant at the .01 level; that correlation between the drawing judgments and case history

judgments of adjustment was .62, significant at the .05 level. The high reliability can be partially explained, and disparaged, by the high degree of homogeneity of the judges which would tend to raise the reliability coefficient. The precariousness of establishing the criterion, "adjustment," on the basis of judgments by the authors of the subjects' case history data, and of employing linear product-moment correlation as the statistic makes the conclusion with regard to validity suspect.

In derogation of the global approach were several studies. Zimmer (1955) found no statistically significant correlation between his global judgments of the drawings by seventy-three airmen and their performances on a sentence completion test, both rated for adjustment. Whitmyre (1953) pointed out a factor in global judgments which might invalidate a judgment made with that approach. He had twelve psychologists judge globally the drawings by 50 psychiatric patients and 50 non-patients according to the degree of adjustment present and the degree of artistry present. Whitmyre found that there was a correlation of .89 between the adjustment judgments and the artistic judgments, which is significant beyond the .01 level. Moreover, the adjustment judgments did not differentiate between the patient and non-patient groups at the .05 level of significance. Unfortunately Whitmyre did not acknowledge such factors as intelligence in his results. Goldstein and Rowan (1957) in their study of aggression indices made the only direct comparison between the two approaches to diagnosis with drawings. The authors examined the drawings by a control group of twenty and an experimental group of nineteen hospital attendants who were thought to differ in aggression level. Goldstein and Rowan reported that global judgments did not differentiate the groups at the .05 level of significance, whereas

judgments based on some details in the drawings were successful in differentiating between the groups beyond the .05 level.

The contaminating factors demonstrated as present in global judgments and the inability of supporters of the approach to establish and communicate a criterion upon which to make global judgments dissuaded the writer from choosing this approach to diagnosing drawings in the present study.

3. Signs versus formal elements.[1] This controversy over which kind of detail was superior was only theoretical in that both kinds were considered in all comprehensive studies. Machover (1949, p. 6) seemed to favor formal elements.

> In studying drawings . . . it has been observed that structural and formal aspects of drawings, such as size, line, and placement, are less subject to variability than content, such as body details, clothing, and accessories.

The present study incorporates both signs and formal elements.

C. Psychological Applications of Human Figure Drawings

In addition to the applications of human figure drawings mentioned previously in the discussion of versions--psychopathological diagnosis, measurement of intelligence, and inference about interpersonal relationships--other uses are suggested. Freeman (1936) recommended drawings as a means of establishing rapport between psychiatrists and their child patients. Buck (1948) saw drawings as a stimulating focal point around which his Post Drawing Interview took place. Appell (1931) suggested the technique whereby the child and the psychiatrist alternately drew during the interview, enabling the gradual approach of the discussion

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[1]These terms are defined on page 3.

towards the more intimate and inaccessible details of the patient's life. Naumburg (1947), in addition to the diagnostic aspect, recognized a therapeutic aspect in drawing activity, whereby there was opportunity for release of tension for the patient. Bieliauskas (1960) used the H-T-P test to study sex identification, as did Swenson and Newton (1955), and Mainard (1953). Sexual differentiation was studied by Swenson (1955), Swenson and Newton (1955), Sipprelle and Swenson (1956), Fisher and Fisher (1950), Cutter (1956), and Smith (1953). Lorand (1957), in the one study which proposed the utilization of drawings in school guidance programs, attempted without success to measure maturity by means of children's drawings. She found that her ratings did not correlate statistically significantly with the teachers' ratings.

The present study involves the application of drawings for psychopathological diagnosis.

D. Validity Studies of Indices

This section, in its organization, makes use of the psychological categories with which individual indices were associated in the literature. Certainty in linking indices and categories was not possible because the writers did not define terms, did not always use the same terms, and did not precisely describe the indices. In some cases there was doubt that the same psychological characteristics and the same drawing characteristics as in other studies were being considered. However, the considerable coincidence in general meaning of terms and in similarity of indices justifies this linking and the organization of this section.

1. Indices accepted in the present study. Of the list of around 300 indices proposed by the source authors, the present study incorporates

fifteen indices whose validity was to some extent supported by the research studies. A difficult problem existed with regard to deciding to accept or reject an index according to the conclusions of the research studies. Because many of the studies lacked statistical sophistication in their treatment of data, their conclusions with regard to the validity of an index might be questionable. However, so that enough indices could be assembled here for examination it was necessary in the choosing of indices to largely ignore this deficiency and to accept the conclusions of the authors on the basis of the evidence supplied. An index was accepted for inclusion in the present study if one research study supported its validity, even if other studies gave it non-support.

Three psychopathological categories are encompassed in the accepted indices: aggression, anxiety, and paranoid state.[1]

(a) The seven indices of aggression are listed below, along with their sources, supporters, non-supporters, and designations in the D-O-W-S test.

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[1]Recognizing that it would be impossible to reach a consensus on the meanings of these terms as used by the writers of the literature, the writer has assumed the following definitions for use in the present study:

Aggression - the tendency to act out against others, perhaps with hostility.

Anxiety - the tendency to be emotionally apprehensive, perhaps with unreality.

Paranoid state - the tendency to have transient and unsystematized delusions of persecution or grandeur.

Description in the Literature	Source	Supporter	Non-Supporter	D-O-W-S Test Designation
slash-line mouth	Machover, 1949, p.44	Goldstein and Rowan, 1957		AGG-1
teeth	Machover, 1949, p. 44	Goldstein and Rowan, 1957 Cramer-Azima, 1956		AGG-2
line-emphasized nostril	Machover, 1949, p. 55	Goldstein and Rowan, 1957		AGG-3
fist	Machover, 1949, p. 64	Goldstein and Rowan, 1957		AGG-4
spiked fingers	Machover, 1949, p. 64	Goldstein and Rowan, 1957		AGG-5
square shoulders	Machover, 1949, p. 71	Goldstein and Rowan, 1957	Kotkov and Goodman, 1953	AGG-6
toes	Machover, 1949, p. 67	Goldstein and Rowan, 1957		AGG-7

Goldstein and Rowan (1957) examined all of the Machover indices proposed as signifying aggression. They administered the D-A-P test twice to thirty-nine hospital attendants, divided into a control group of twenty and an experimental group of nineteen. In the first testing session both groups were treated permissively; in the second session the control group were again treated permissively, but the experimental group just before beginning to draw received an announcement regarding their work that was calculated to anger the group members. The drawings were inspected for changes that had occurred between the two testing sessions. Goldstein and Rowan found seven indices, listed above, that differentiated

the groups at the .05 level of significance. Although they used more care in experimental design and more acceptable statistical procedures than many of the writers whose studies are included here, their study has a weakness in its design. There is no certainty that the anger-producing stimulus which was given the experimental group resulted in feelings of aggression being aroused. Some subjects might have reacted with feelings such as despair, resignation, anxiety, or paranoid delusions. The presence of these reactions might contradict or contaminate the results.

Cramer-Azima (1956), in studying the drawings of a patient during treatment with andrenocortecotropic hormone, found that in the drawings done in the early stages of the treatment the patient's drawings of people contained teeth, whereas in the later stages, the drawings did not contain teeth. This finding is not offered by the writer as strong evidence of this index's validity--generalizing from a single case would be dangerous, although Cramer-Azima seems to be suggesting this.

Kotkov and Goodman (1953) seem to offer contradictory evidence with regard to the meaning of the index "square shoulders." In their study which compared the drawings by thirty-six obese women and the drawings by twenty ideal-weight women they found that seven indices, of which "square shoulders" was one, differentiated the groups at the .05 level. However, the characteristic being examined and the association of the other six indices was anxiety, not aggression. This finding may, of course, be considered as supportive if the groups did in fact differ in aggression, a possibility not explored by Kotkov and Goodman.

(b) The six indices of anxiety are listed below, along with their sources, supporters, non-supporters, and designations in the D-O-W-S test.

Description in the Literature	Source	Supporter	Non-Supporter	D-O-W-S Test Designation
distance between figures of more than two inches	Royal, 1949, p. 392	Royal, 1949	Hoyt and Baron, 1959	ANX-1
form of head tends to be rectangular	Royal, 1949, p.392	Royal, 1949	Hoyt and Baron, 1959	ANX-2
line of body and clothing continuous	Machover, 1949, p. 76	Royal, 1949	Hoyt and Baron, 1959	ANX-3
one figure on higher plane	Levy, 1950 p. 276	Royal, 1949	Hoyt and Baron, 1959	ANX-4
left placement	Machover, 1949, p.84 Buck, 1948, p. 372 Levy, 1950, p. 275	Bradshaw, 1952 Cramer-Azima, 1956 Heatherington 1952 Hoyt and Baron, 1959 Kotkov and Goodman, 1953 Margolis, 1949	Dennis, 1958 Royal, 1949 Weider and Noller, 1953 Wexler and Holzberg, 1952	ANX-5
figure length size height area	Machover, 1949, p.91 Levy, 1950, p. 270	Cramer-Azima, 1956 Goldworth, 1950 Heatherington 1952 Hoyt and Baron, 1959 Hulse, 1952 Margolis, 1948 Royal, 1949	Keyes and Laffal, 1953 Kotkov and Goodman, 1953 Wexler and Holzberg, 1952	ANX-6

Royal (1949) examined the human figure drawings done by eighty patients who "had been diagnosed as anxiety neurotics or anxiety states by psychiatrists" in comparison with the drawings done by 100 "volunteers from a dental clinic [who] were free from overt anxiety and 'nervousness.'"

He found eight of the twenty-eight indices investigated to be able to differentiate the groups at the .20 level or beyond. Five of these eight indices are accepted for inclusion in the present study; the three rejected were thought to be impracticable in terms of the design of the present study. The three rejected were "erasures," "pencil pressure light," and "rotation of paper." The use by Royal of parametric tests is not wholly acceptable: the inherent assumptions cannot be made with certainty. Moreover, the establishment of the criterion of this study is precarious. The judgments about the psychiatric patients, which were given by various psychiatrists at various times and were apparently confused in terminology, were not likely consistently accurate. Also, the claim that the dental patients were free of anxiety seems to have been made as Royal's opinion only.

Bradshaw (1952) supported the test-retest reliability of left placement in his study with one hundred adults, finding a consistency in the placements, significant at the .01 level.

Cramer-Azima (1956), discussed earlier on page 13, found that the placement of the drawn figures progressed towards the right away from left placement as her patient's treatment with ACTH progressed.

Heatherington (1952) asked ten patients undergoing electric shock therapy to draw, at various times during treatment, human figures. He claimed without statistical evidence that the effect of the therapy was for the placement of the figures to be more to the middle of the page and for the size of the figures to become larger as treatment progressed. This subjective conclusion cannot be considered as much support for the validity of these indices.

Hoyt and Baron (1959) determined high and low anxiety groups among

112 psychotic women by means of the Taylor Manifest Anxiety Scale and then administered the D-A-P test. Of Machover's indices said to indicate anxiety, Hoytand Baron found only two that differentiated the high and low anxiety groups at the .05 level: "left placement" and "figure size." The uses here of psychotic patients and a selection instrument for which no validity was reported, are weaknesses of design. The inclusion of a group of non-psychotic subjects, whose performances on both tests could have been compared to the other groups' performances, would have been preferable.

Kotkov and Goodman (1953) compared the D-A-P test drawings done by thirty-six obese women and the drawings done by twenty ideal-weight women with regard to thirty-two indices which a pilot study had supported. The groups had been matched with regard to age, education, I.Q., marital status, and occupation. Kotkov and Goodman found seven indices to be significant at the .05 level or beyond in differentiating the groups. Five of the seven indices had to do with heights and areas, one was "square shoulders,"--discussed on page 13--and one was "left placement." The writers here found the obese group drew heads and figures that were larger than those drawn by the ideal-weight group. This finding is in contradiction to much of the opinion and conclusions of other studies with regard to the index "size." The index "left placement" was supported by the finding that the obese group more often than the ideal-weight group drew figures in the left third of the page, significant at the .001 level. The assumption which Kotkov and Goodman seem to have made, that the only, or perhaps dominant, psychological characteristic differentiating the groups was anxiety, is naive. The presence of characteristics such as aggression was not considered, although the appearance of the index "square shoulders" suggests this. The finding

of large heads and figures drawn by the obese group is reinterpreted by the writer in a later section discussing drawings as related to self theory.

Margolis (1948) studied the drawings by a sixteen-year-old girl drawn at various times while the girl was undergoing psychotherapy. Although no statistical evidence was presented, Margolis concluded that "left placement" and "small size" of drawn figures indicates anxiety. The naive generalization and lack of objective precision are the obvious weaknesses of this study, which cannot be considered as contributing much evidence about the validity of the indices discussed.

Goldworth (1950) compared the drawings made by 150 mental patients of various disorders, with drawings made by fifty non-patients and found he could differentiate the two groups at the .05 level of significance on the basis of size of heads and figures drawn.

Hulse (1952) concluded that size of the drawn figure indicated anxiety, although he did not give any statistics from his study of "several hundred" drawings made by patients about their families. This opinion offers very little evidence about the validity of the index.

Royal (1949), discussed on page 14, did not support the validity of "left placement"--non-significant at the .20 level--although he supported most of the indices of anxiety here.

Dennis (1958) studied the handwriting and figure placements of 651 Egyptian and Lebanese children, compared with the same characteristics of 1,075 American and Armenian children and concluded that the handwriting convention of the child's culture influenced the placement of a drawn figure. The Egyptian and Lebanese children, who are taught to begin a line of writing in the upper right corner, placed their figures less often

on the left side than did the American and Armenian children, significant at the .01 level. While this study does not negate the validity of "left placement,"--degrees of "left placement" can still be compared as indications of anxiety--it does suggest the presence of a contaminating element in this index's rationale.

Weider and Noller (1953) criticized the validity of "left placement" on the grounds of a developmental characteristic of drawing. They noted from their study of 438 children's drawings that younger children tended to draw in the upper left corner in contrast to older children who drew more centrally.

Wexler and Holzberg (1952), in comparing the drawings made by thirty-eight schizophrenic patients with drawings made by seventy-eight normal nurses, found that the groups did not differ at the .05 level of significance with regard to "left placement" or "size."

Keyes and Laffal (1953) studied the sizes of scribbled shapes made by twelve success students and by twelve failure students and found non-significant differences at the .05 level. To the degree that failure students could be expected to have more feelings of anxiety than success students, and to the degree that the sizes of scribbled shapes can be equated with sizes of human figures, this study presents non-support of the validity of the index "size."

(c) The two indices of paranoid state are listed below along with their sources, supporters, non-supporters, and designations in the D-O-W-S test.

Description in the Literature	Source	Supporter	Non-Supporter	D-O-W-S Test Designation
eye emphasis outlined eyes	Machover, 1949, p.16 Buck, 1948, p. 379	Reznikoff and Nicholas, 1958	Fisher and Fisher, 1950 Griffith and Peyman, 1959 Wexler and Holzberg, 1952	PAR-1
emphasized body outline	Levy, 1950, p. 282	Reznikoff and Nicholas, 1958	Fisher and Fisher, 1950	PAR-2

Reznikoff and Nicholas (1958) compared the D-A-P test drawings made by thirty-one paranoid patients with those made by thirty non-paranoid patients. Of the indices Machover associated with paranoid state only two differentiated the group significantly: "eye emphasis" at the .02 level and "emphasized body outline" at the .05 level. The absence of a sample of normal subjects for use as a control group is a limitation in the design of this study.

Fisher and Fisher (1950) used three markers to examine the D-A-P test drawings made by thirty-two paranoid schizophrenic patients. All of Machover's indices of paranoid state were considered. The authors found that only thirteen of the patients' drawings showed three or more paranoid indices--the authors' cutting point. This was not considered as satisfactory, although no statistical conclusion was given. Fisher and Fisher seem to have ignored the fact that only two of their patients showed no "paranoid signs" in their drawings. Because of the absence of a non-paranoid sample with which to compare the results of this study and acceptable statistical procedures, it is difficult to assess the authors' conclusion.

Griffith and Peyman (1959) from out of the D-A-P tests given to 745

psychiatric patients selected eighteen patients whose drawings showed the presence of eye emphasis and ear emphasis and fifty-eight whose drawings did not. The case histories of these patients were examined by two psychologists for presence of ideas of reference and their findings were related to the two groups for a chi-square comparison. A difference, significant at the .01 level, was found. But in the selection of cases on the basis of paranoid indices in the drawings non-significant results were obtained. "Only five of the eighteen subjects in the eye-ear emphasis group were diagnosed as having paranoid involvement, while eight subjects in the control group were so diagnosed." As in other studies, the establishment here of the criteria on the basis of judgments of case histories is questionable.

Wexler and Holzberg (1952), mentioned on page 18, also considered the index "eye emphasis" finding that it did not differentiate their groups at the .05 level of significance.

2. Indices rejected from the present study. The writers of the studies discussed in the pages just preceeding this section were responsible for discarding a great number of indices associated with the three categories of psychopathology just discussed. A number of indices supplied by and examined in the literature were not included in the present study because either they received no support in any of the research studies or they were associated with psychological characteristics which obviously were irrelevant, or which were not shown as relevant, to the subject area of the present study, the adjustment of children.

Some studies examined the indices which the source writers, Machover, Levy, and Buck, associated with the psychological state homosexuality. The results were largely destructive of the indices' validity.

Barker, Mathis, and Powers (1953), after a study of the drawings of sixty airmen with homosexual histories and of sixty airmen with heterosexual histories, using as indices some of their own and some proposed by Machover, rejected all indices except two: "delay in verbal identification with the same sex figure" and "distortion of the female figure." Grams and Rinder (1958) discarded all of Machover's and Levy's indices of homosexuality. DeMartino (1954) did find that his thirty-seven retarded male homosexual subjects often drew eyelashes and high heels on their drawn figures.

Because the application of the supported indices of these studies would be impractical, and unwise upon such little evidence of validity, none of the indices of homosexuality were included in the present study.

Studies investigating sexual differentiation in drawings did not establish any relation between this characteristic and adjustment, and were thus considered as supplying irrelevant and inconclusive information. Bieliauskas (1960), Mainard (1953), and Swenson and Newton (1955) contributed studies in the area.

The criticism and conclusion regarding the studies of sexual identification shown in drawings are the same as those for sexual differentiation above. Fisher and Fisher (1952), Cutter (1956), and Sipprelle and Swenson (1956) carried on studies investigating this characteristic.

Studies of visual-motor function shown in drawings did find differences between their respective groups, but did not establish a relation between their criteria and adjustment, nor did they report the validity of any index, capable of use in the present study.

Michal-Smith (1953) considered the quality of line in the drawings of fifty children tested with the H-T-P test and compared the observations

with the children's electrocardiograph readings. He could differentiate at the .05 level of significance the group of twenty-five children with normal ECG ratings from the group of twenty-five children with abnormal ratings on the basis of their drawings. Koppitz (1950) administered the D-A-P test and the Bender-Gestalt test, which, requiring the copying of set designs, is said to measure ability in visual-motor functioning. He compared test performances of two grade two classes whose teachers used widely differing methodology in their work. Koppitz found that he could differentiate the groups at the .05 level of significance on the basis of the D-A-P test drawings.

In detecting organic mental disease through drawings, Reznikoff and Tamblin (1956) achieved some success, but there was again failure to establish any relevance between the findings and the subject area of the present study. Reznikoff and Tamblin were able to differentiate between groups of eighty-one neurotic, schizophrenic, and organic mental patients by means of their drawings, using the indices "shrunken arms and legs," "weak synthesis," "parts misplaced," and "petal or scribbled fingers."

3. Summary and the writer's assumptions regarding the use of the indices in the present study. Fifteen indices from the literature were accepted for inclusion in the present study. All have been associated with, and to some extent shown to indicate, psychopathological states. The evidence upon which the acceptance of the indices was made is acknowledged as weak because the related studies used varying and sometimes unacceptable statistical procedures, were vague in defining terms and describing criteria, and often involved groups of subjects whose psychological characteristics were obviously markedly abnormal. Generalizations on the basis of these studies' findings must thus be uncertain. However, there is

heuristic value in an examination of the indices by the present study.

The fifteen indices, in combinations, form four measures of the D-O-W-S test: Drawn Adjustment, Drawn Aggression, Drawn Anxiety, and Drawn Paranoid State.

The basic assumption of the D-O-W-S test measures is that drawings reveal the personality of the person who draws. In his drawings the subject literally and symbolically records a reflection of what he sees, what he knows, and what he feels about the objects in his drawings. Although the drawings might contain misperceptions, misconceptions, fantasies, and idiosyncratic symbolism, enough of the detail represents the subject's reality and enough of the symbolism is typical so that the indices seen in the drawings can be diagnosed according to the systems of the literature. The indices of the present study are considered to be affective, symbolic details.

Any modification of the indices that occurred in the writer's interpretation of them for inclusion in the present study is not expected to have been great enough so as to harm the validity of the indices. In requiring in the D-O-W-S test that four drawings of figures be made, depicted in different interpersonal situations, the writer assumes that there will be adequate stimulation of and opportunity for the subject's projection of his feelings. This design is seen as avoiding the weakness of the D-A-P test noted by Martin (1956):

> The sample of drawings was inadequate since we obtained only one drawing from each child. Evidence concerning the amount of intra-individual variation in expressive content is lacking, but it is reasonable to assume the existence of some. . . .

In proposing to measure adjustment[1] by first adding the number of psychopathological indices and then subtracting the sum from a constant, the writer makes several assumptions: that adjustment is the direct opposite of maladjustment, so that a mathematical transposition is possible; that the indices of psychopathology chosen here represent degrees of maladjustment; that each of the indices signifies an equal amount of maladjustment.

In summary, the theory of the present study with regard to the indices and adjustment is that the degree to which a subject does not record indices of psychopathology in his drawings is evidence of the subject's adjustment.

In proposing to measure aggression, anxiety, and paranoid state[2] by adding the few indices that were shown to be somewhat valid in indicating each psychopathological state, the writer assumes that each group of indices is a representation of all possible valid indices of its respective psychopathological state; that each of the indices is equal in degree of representation and validity.

E. Studies Suggesting the Measurement by Drawings of Self-Acceptance

On the basis of scattered opinion and scant research evidence in the related literature, the writer proposes the measurement in drawings of the

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[1]The writer's use of adjustment and related terms follows:
Adjustment - a judgment of the degree of an individual's general and pervading success in satisfying his needs concurrent with the demands of his environment.
Drawn Adjustment - a D-O-W-S test measure; the degree to which there is absence in the subject's drawn figures of the indices of psychopathology.
Maladjustment - a judgment of the degree of an individual's general and pervading failure in satisfying his needs concurrent with the demands of his environment.
Emotional Maladjustment - evidence of emotional disturbance because of maladjustment.
Psychopathology - synonymous with maladjustment except that the connotion relates specifically to mental diseases.

[2]The writer's use of these terms is explained on page 11.

self theory construct, self-acceptance.[1] The justification for this pursuit is presented in five stages of assumptions: (1) that perceptions of and feelings about a subject's self are expressed in his drawings of representations of himself; (2) that size of the drawn figure is an index of esteem; (3) that the drawn head is representative of the whole figure; (4) that size of the drawn head is an index of esteem; (5) that a comparison of the head size of a figure drawn as a self with the head size of a figure drawn as an ideal self is an index of self-acceptance.

1. It was apparent in many of the related studies that the writers were assuming that the drawn figure was a self-depiction by the subject and an expression of his feelings about himself. Some, such as Machover (1951, p. 342), clearly stated this view:

> The drawing of a person, calling as it does upon the vast imagery of one's experience with oneself and world about one, should by its very linkage with the self have potentiality for rich self-projection. . . .

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[1]The definitions of self theory terms used in the present study follow:
Self - the total of perceptions and memories held, with varying degrees of consciousness, by the individual as belonging to him as differentiated from other phenomena of his environment.
Self - a figure drawn on the D-O-W-S test and designated as representing the individual. It is assumed to be a drawn self-concept.
Self-concept - the portion of the self that is made known.
Self-esteem - the sum of positive feelings towards the self.
Ideal Self - the total of the various standards associated by the individual, with varying degrees of consciousness, about perceptions of the self.
Ideal Self-concept - the portion of the ideal self that is made known.
Self-acceptance - the degree of congruency of the self and the ideal self perceived by the individual with varying degrees of consciousness; accompanied by evaluative feelings of self-esteem; positively related to adjustment.
Drawn Self-acceptance - a D-O-W-S test measure; a quantification of self-acceptance symbolically expressed in the relative sizes of the heads of drawn human figures, which are considered to be self-concepts and ideal self-concepts.
Body-image - the portion of the self that concerns the body of the individual.

A study which directly applied constructs of self theory was that of Kamano (1960). He asked forty-five schizophrenic women subjects to rate verbally the figures they had just drawn on the D-A-P test. He then administered an adjective rating scale in a self-report measurement of "My Ideal Self," "My Actual Self," and "My Least Liked Self." A comparison of the subjects' ratings revealed a correlation, significant at the .01 level, between the subjects' rating of "My Actual Self" and ratings of the drawings. Correlations with the other self-ratings were not significant at the .05 level. Thus it seems that feelings about the self are expressed in the drawing of figures in a similar fashion as such feelings are expressed in self-reports.

Bodwin and Bruck (1960) collected thirteen indices from Machover's list which were "thought to reveal self-concept." Considering these indices, they examined the D-A-P test drawings of sixty children from ages ten to seventeen. The self-concept of each child was then rated by a judge on the basis of a structured interview with each child. The authors found a correlation of .61, significant at the .01 level, between the judge's rating and "drawn self-concept" when they compared the upper and lower twenty-seven per cent groups of adjustment ratings.

Berman and Laffal (1953) considered only a portion of the self, body-image. They compared the Sheldon somatotype ratings of the physiques of eighty-eight clothed male neuropsychiatric patients with the somatotype ratings of the D-A-P test drawings done by the patients. The authors did both ratings and did the rating of the drawings blind. They found a correlation of .35, significant at the .01 level, between the ratings, and concluded that the drawings to some extent represented the body-image of the subjects. The Pearson correlation coefficient gives a poor

indication of significance here because of the likelihood of much common variance. The crudeness of the ratings, too, detract from the certainty of the conclusion. In the study of Kotkov and Goodman (1953), discussed on page 16, the results might be considered as evidence of body-image being expressed. They found that the obese group drew figures and heads which were larger in area and height in comparison to the drawn figures and heads of the ideal-weight group.

Abel (1953) examined drawings done before and after plastic surgery by seventy-four women with severe facial disfigurements. His search for changes in pairs of drawings done by the same patients was unsuccessful in finding a significant difference at the .05 level. Abel reflected that perhaps he should have asked the patients specifically to draw themselves.

Schmidt and McGowan (1959) studied the D-A-P test drawings of thirty physically disabled patients and thirty physically normal patients. Using global judgments of paired drawings nine judges were able to differentiate between the groups on the basis of the drawings at the .01 level of significance. While the conclusion that the drawing differences occurred because of differences in the way the subjects considered and felt about their bodies cannot be made with certainty, it is a reasonable explanation.

It appears to the writer that despite the limitations in the related studies there is some support here for the assumption that in his drawings of figures representing himself, the subject depicts perceptions and feelings about his self.

2. The significance which various writers attached to the index "size" has been discussed on page 14, where it is ascribed to the psychopathological state anxiety. Cramer-Azima (1956), Goldworth (1950),

Heatherington (1951), Hoyt and Baron (1959), Hulse (1941), Kotkov and Goodman (1953), Margolis (1948), and Royal (1949) supported, some with weak evidence, the rationale of this index that small figures signify anxiety. Because none of these studies clarified nor analyzed the meaning of "anxiety," it is possible to reinterpret the significance of the index "size" in terms of self theory. One pair of writers appears to make this connection.

Lehner and Gunderson (1953) studied the heights of D-A-P test figures drawn by 212 college students, aged twenty to fifty years, to obtain normative data with regard to this index. They found sharp drops in heights after the thirty-year point for men and after the forty-year point for women. The writers had made the following speculative hypothesis.

> . . .size of the figure reflects the drawer's self-concept, or more especially, that it is an index of the person's self-evaluation. . . .

On the basis of their findings and generalizations about sexual prowess and age, Lehner and Gunderson felt that their hypothesis was substantiated. The weaknesses in design and assumptions, and elementary nature of statistics used, detract from the contribution of this study.

It is assumed that the size of a figure drawn as representing the self directly signifies positive feelings towards the self, or self-esteem, as well as inversely signifying "anxiety." Parallel to this, it is assumed that the size of any drawn figure is an indication directly of the esteem felt by the drawer for the person being represented.

3. The importance of the drawn head in psychodiagnosis, and possibly in being representative of the whole figure, is supported

by opinion and some research evidence.

Machover (1951, page 354) observed:

> More frequently it is the head that is articulated with detailed skill and care, while the body is fragmently schematized or broken. The head is the most consistently exposed part of the body, and according to many investigators, the locus of the self. . .

Levy (1950, page 277) reiterated the drawn head's importance.

> . . .head region . . . is usually drawn first. Most individuals' concept of self is focussed in the head and face . . . .

Goldworth (1950), discussed earlier on page 16, found that the size of the head was able to differentiate his groups of patients and non-patients, as was size of figure. This suggests an equality in power of the two indices. No other study was found which incorporated both of these indices, so that further comparison of them is not possible.

The writer assumes that the head of the figure drawn as the self is representative of the self, and that the symbolism seen in the drawn head can be interpreted to apply to the self. Parallel to this, it is assumed that the head of any drawn figure is representative of the whole of that figure, and that the symbolism seen in the drawn head can be interpreted as applying to the person being represented.

4. The symbolic meaning of size, when applied to the head of a figure drawn as the self, might not be linear in depicting self-esteem. While, from the conclusions regarding small figures it can be assumed that the small head, which a small figure would possess, would indicate low self-esteem, a large head is also interpreted as indicating a negative personality feature.

Machover (1953, page 37) observed:

> A youngster whose emotional and social adjustments have been dislocated because of severe reading or other subject

disabilities will frequently draw a large head in his figure.

No study investigated the curvolinear meaning of head size. The present study assumes that relatively small heads and relatively large heads on figures drawn as the self are indices of low self-esteem. A weakness in the literature with regard to this index has been lack of precision in determining small and large. The writer believes that this is avoided in the D-O-W-S test by asking for the inclusion of other figures than that drawn as the self. By reference to the other figures a relative size of the figure drawn as the self can be calculated.

5. By the inclusion of other figures in the D-O-W-S test drawing task, the writer believes that, not only is the calculation of size improved, but it becomes possible to measure self-acceptance from the drawings.

Self theorists, such as Rogers and Dymond (1954), consistently interpret self-acceptance as the degree of congruence of the self and the ideal self, the interpretation of the present study. The self, as the third stage of assumptions here established, is assumed to be represented in head of the figure drawn as the self -- the self[1]. The writer further proposes that in the head of peer[2] there is a symbolic, representative depiction of the ideal self. Many self theorists and other psychologists seem to be of the opinion that during adolescence

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[1]Self: figure drawn on the D-O-W-S test pages under which an X is marked, thereby identified consciously by the subject as himself; considered to be a self-concept.

[2]Peer: figure drawn on the D-O-W-S test pages: the figure of the same sex as the self on page one, and the other child figure on each of pages two, three, and four; considered to be a depiction of the ideal self.

the standards against which a person evaluates himself are dominantly the characteristics possessed by immediate peers; that peers determine the ideal self, to a large extent. The writer accepts this opinion and thus makes the assumption that in drawing the head of peer the child subject is depicting symbolically and representatively the ideal self; that each peer is an unconscious projection of theideal self.

Upon these bases the writer assumes that a comparison, curvo-linear in nature, of the sizes of the heads of self and peer yields a measure of self-acceptance.

In the design of the formula for Drawn Self-acceptance, in which four measurements of head size ratios are considered, the writer assumes that chance variation in sensorimotor function has been minimized.

CHAPTER III

RESEARCH DESIGN

A. The Pilot Study

A pilot study leading to the present study was conducted in January 1960 with grade eight students in an Edmonton school, using a prototype of the D-O-W-S test. The subjects were twenty-eight girls and twenty-five boys with a mean age of 14.3 years and intelligence ratings with a mean of 105.8 and a standard deviation of 10.5 units.

The test consisted of a single page which requested the drawing of three figures by asking, "Draw a boy, yourself, and a girl, all standing waiting at a bus stop." This drawing task, created by the writer, was thought to be an improvement upon the regular Draw-A-Person drawing assignment because, while retaining an unstructured form, it asked the subject to depict specifically himself and it included other figures against which relative size could be measured. Three measures were taken from the drawings: placement of all figures in the left half or not, head size of the figure drawn as self in relation to the head size of the other figure of the same sex, and amount of deviation of the head size of the figure drawn as self in relation to the head size of the other figure of the same sex. The left placement index was selected because of all the psychopathological indices it was the most thoroughly examined and best validated. Head size was considered in two ways because the literature suggested the possibility of a dual interpretation.

Ages, heights, weights, and intelligence ratings were collected on the subjects from the school records. Measurements to the nearest quarter inch were taken of the actual head lengths of the subjects. The subjects were rated by the six teachers of the school as "in need

of guidance" or not.

The test was administered in two separate sessions under standard conditions, by the writer.

Product-moment correlations were calculated between each of the three measures taken from the drawings and each of the other six measures. The group of students said to be in need of guidance (N = 15) and the remaining group of students (N = 38) were compared by the t-test for differences with regard to the three drawing measures and intelligence.

Correlations non-significant at the .05 level were found in all cases, although the correlation of intelligence with deviation of drawn head size was significant at the .10 level. One of the t-tests showed a difference significant at the .05 level: the groups with regard to intelligence. The directions of differences between the means of the scores of the three drawing measures were those which would be expected of measures of adjustment.

The results were interpreted as showing the importance of the factor intelligence, the promise of drawing tests for measuring adjustment, the need for more drawing tasks to be included, the need for more indices to be considered, and the need for other influences to be investigated.

B. Construction of the D-O-W-S Test

Choice of drawing tasks. Because of opinion in the literature which criticized the single drawing D-A-P test, and the inconclusive results of the pilot study, the writer undertook to increase the number of drawing tasks in the D-O-W-S test. Various drawing task

designs were tried out with children in March and April of 1960, using as subjects two grade six and two grade eight classes of whom the writer was the art teacher. Exercises were assigned asking for the depiction of persons in various situations, but always including a self and a personage which could be considered to be a peer. The following criteria were used in deciding which drawing task designs were superior.

(a) Consistency of interpretation. A situation was to have been similarly interpreted by the vast majority of students.

(b) Minimum of structuring. As Murstein (1957) has pointed out, the degree to which the stimuli is unstructured will determine the success of the subject's projection in the drawing. Those pages which required little graphic or verbal structuring were seen as desirable.

(c) Consistency of perspective. To aid standardized interpretation, those stimuli which elicited drawings in which the figures were depicted more often in similar poses and two-dimensional placements were seen as desirable.

During this experimentation it became apparent that the number of pages that could be completed by students in a typical school period of thirty minutes was four. Asking for five or more drawing tasks often meant excessive rushing by the students and subsequent loss of detail in their drawings. Asking for three drawing tasks meant that there was ample time, but the details which appeared to be added in the additional time were not of significance to the purpose of the present study, and the test behavior of the class tended to deteriorate.

The writer chose the following drawing task designs.

Draw a boy, yourself, and a girl, all standing waiting at a bus stop. Show yourself carrying a small box. (Page one of the D-O-W-S test.)

Draw yourself and a friend going to a party. Put some money in your hand. (Page two of the D-O-W-S test.)

Draw a teacher talking to you and another student at your school. Show yourself carrying a book under your arm. (Page three of the D-O-W-S test.)

Draw a policeman talking to you and a friend about being careless while crossing the street. Draw a badge on the policeman and an apple in your hand. (Page four of the D-O-W-S test.)

These instructions were printed at the top of the individual pages of the D-O-W-S test, and given orally for reinforcement. The addition of the second sentence in each case was to encourage the identification of the subject with the self, and by involving the hands and arms to encourage the subject to draw hands, upon which two of the indices, AGG-4 and AGG-5 depended.

Choice of other test booklet details. The first of the pages listed above included the reproduction of a bus stop sign and a base line, a straight line near and parallel to the bottom of the page which the subject uses as a ground on which to place drawn figures. The presence of the bus stop sign seemed to have discouraged a tendency of some subjects to draw very small figures, which would be difficult to examine for detail and to measure, and yet did not severely prescribe the size or placement of the drawn figures. The consistency of perspective in the drawings was seen to be affected favorably, also.

The purpose of the base line on the first page was to aid consistency of perspective in the drawings, but the writer considered the use of base lines on the other pages unwise because projection might be curtailed. Faint limit lines only were reproduced on the top and

bottom of the last three pages.

Additional instructions were printed at the bottom of each page, as follows.

Now, mark an X under the figure that you have drawn as yourself.

Requiring the subject to mark an X under the figure he thought of as himself was seen as helpful in ensuring that the subject identified with one of the drawn figures. Because this was the last mark put on a page, it was considered to supersede other identifying marks if contradiction occurred. In this case, a transfer in identification was considered to have taken place.

The cover of the booklet and the page instructions were designed so as to bear no clue regarding the psychological purpose of the test. The test booklet was titled "Drawing Survey." For purposes of the present study the booklet cover provided space for recording identifying and descriptive information. Some of this data was later ignored as irrelevant information. The last page included, at the bottom, space for an additional identification of the subject in case the cover became detached in the handling of the booklets.

Choice of administration instructions. The administration instructions of the D-O-W-S test were adopted in part from the administration instructions used in the pilot study. The aims of these instructions were to repeat and reinforce the printed instructions so that the subjects were likely to have full understanding of the tasks, and to direct the subjects in their use of time so that all pages of the D-O-W-S test would receive an equal share of attention. Because the samples would differ with regard to abilities in language comprehension and kind of testing situation, three versions of the administration

instructions were prepared: for the elementary school classes, for the junior high school classes, and for the delinquent subjects. Copies of these are included in the Appendix.

Choice of D-O-W-S test measures. Six measures are obtained by means of the D-O-W-S test, four involving the indices of psychopathology and two involving the measurement of head sizes.

(a) Drawn Adjustment comprises all of the fifteen psychopathological indices[1] in its formula.

Drawn Adjustment = 100 - n

n is the total number of indices scored as present on all four pages of the D-O-W-S test. The assumptions inherent with this measure have been discussed on page 23.

(b) Drawn Aggression is calculated by summing the number of times that the seven indices of aggression are scored as present on all four pages of the D-O-W-S test. The description and explanation of each index are given below.

AGG-1. Mouth: score if the mouth of self is drawn with a slash-line or with line emphasis.

Mouth is a line or lines drawn in lower half of the drawn head. A slash-line is a line that appears to have been put on with a quick back-and-forth motion so that the corners of the mouth are sharp and the quality of the line is heavy and continuous. Line emphasis is the effect achieved by repeating a line in a continuous manner.

The peer as well as the self is considered in the inspection for indices in those cases where a transfer of identification appears to have occurred.

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[1] See page 11.

AGG-2. Teeth: score if teeth are drawn on self so that lines separating the individual teeth are shown.

AGG-3. Nostril: score if the nostril of self is drawn with line emphasis.

Nostril is a pair of marks in the central region of the drawn head.

AGG-4. Fist: score if a clenched fist is shown on self. Curled fingers must be distinguishable, and another manner of drawing hands must be evident on the pages.

AGG-5. Spiked fingers: score if the tips of at least three fingers of self are pointed, and there is evidence on the pages of another manner of drawing hands.

The requiring of three fingers is a provision to eliminate chance occurrence of this index.

AGG-6. Shoulders: score if the shoulders of self are squared --are generally in the same plane or sloped upwards towards the shoulder points, are formed with generally straight lines, or have points that form ninety-degree angles or less.

Shoulders are the areas of the figure immediately below the head where an increase in the width of the figure occurs.

AGG-7. Toes: score if toes are shown on self. At least one digit must be distinguishable from out of the main mass of the foot.

(c) Drawn Anxiety is calculated by summing the number of times that the six indices of anxiety are scored as present on all four pages of the D-O-W-S test. The description and explanation of each index are given below.

ANX-1. Spacing: score if there is an empty space of more than the height of self between the self and any other figure.

The use of a relative measurement here, rather than a set criterion such as that of Royal (1949): "distance between figures of more than two inches," is seen as an improvement of the index. The height of a figure is measured by a line which bisects the area of each body part through its length, extending from the top of the head, which includes any hat

or hair to the base of the foot on the longest leg.

ANX-2. Head shape: score if the shape of the head of *self* is rectangular -- is formed with generally straight lines and the corners are roughly right-angles. Front view only is considered.

This index is reduced in the scope which Royal (1949) gave it: "head and trunk tend to be rectangular or circular." This reduc tion was made with the aim of clarifying this index.

ANX-3. Clothing and body line: score if the outline of *self* shows no break in continuity of that which forms the body, or if there is no separating line at points where areas of clothing and bare flesh join.

ANX-4. Plane: score if the *self* is in a different plane to the other figures so that the feet of *self* are higher or lower than the feet of the nearest figure by one half of the height of *self*.

The use of a relative measurement here is seen as helpful in improving the validity of the index.

ANX-5. Placement: score if the centers of gravity[1] of all figures are to the left of a vertical line drawn through the left edge of the *N* in the word *now* in the instructions at the bottom of each D-O-W-S test page.

The *N* was placed so that the left two-fifths of the page would be marked off by a vertical line along its left side. From an inspection of the drawings of the pilot study it appeared that this demarkation, rather than the one-third division, would be a more definitive cutting point.

ANX-6. Height: score if the height of *self* is less than two inches.

The use of an arbitrary measurement was necessary when paired

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[1] Center of gravity: a point half-way along the line bisecting the area of the figure through its length.

comparisons were not to be made. An examination of the pilot study drawings showed that the two-inch height might be a suitable cutting point for this index. Royal (1949) had used a two-inch measurement.

(d) Drawn Paranoid State is calculated by summing the number of times the two indices of paranoid state are scored as present on all four pages of the D-O-W-S test. The description and explanation of each index are given below.

PAR-1. Eyes: score if there is line emphasis in the outline of both eyes of self. This does not include eyelashes.

The designation that both eyes show evidence of line emphasis is seen as avoiding the scoring of this index because of chance marking.

PAR-2. Body outline: score if there is line emphasis in the outline of the body of self for at least half of the height of self.

(e) Drawn Self-acceptance is calculated by the following formula.

$$\text{Drawn Self-acceptance} = 100 - 10 \sum_{4} \frac{L - S}{S}$$

L is the larger in size of the head of self and the head of peer; S is the smaller in size of these heads. Size is determined according to the system illustrated in Figure 2, page 42, which usually is by measuring the lengths of the heads in millimeters.

Many of the assumptions inherent in this measure have been discussed in the section starting on page 27; however, the formula carries some assumptions. By subtracting the smaller head-size from the larger and dividing by the smaller it is assumed that a measure is obtained which expresses the relative size of the heads of self and peer. The multiplication by ten was introduced to remove decimal fractions. The subtraction from one hundred converts a negative personality measure into a positive one.

(f) Drawn Head Sizes is a group of measurements collected from each of the D-O-W-S test-booklet pages, four measurements being obtained from a subject. Each measurement is a ratio calculated by dividing the head size of <u>self</u> by the head size of <u>peer</u> on the same page. Each Drawn Head Size is assumed to represent self-esteem. The system for determining size is the same as that of the preceding measure, Self-acceptance. The assumptions of this measure are identical to those of Self-acceptance except that the fourth and fifth stages of assumptions, discussed on page 29, are not involved.

Figure 1. System for Measuring Head Sizes in Calculating Drawn Self-acceptance.

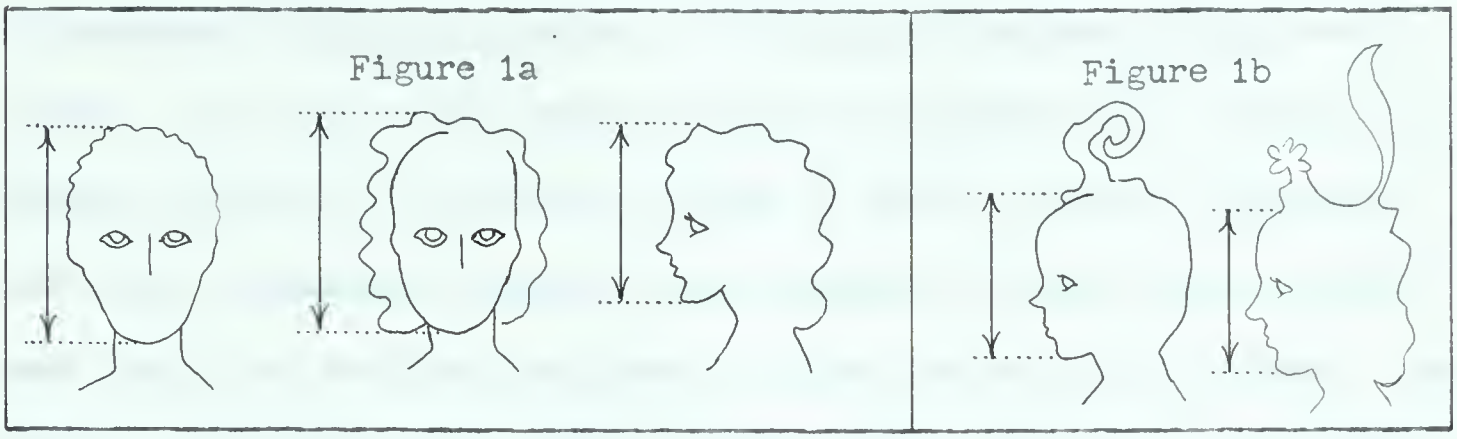


Figure 1a illustrates the usual system of measuring head sizes --by head-length--where the pairs of heads are of apparently equal width and where the head and hair shapes are regular. The hair is included here. Figure 1b shows how height-adding details which do not belong to the general mass of the head are ignored.

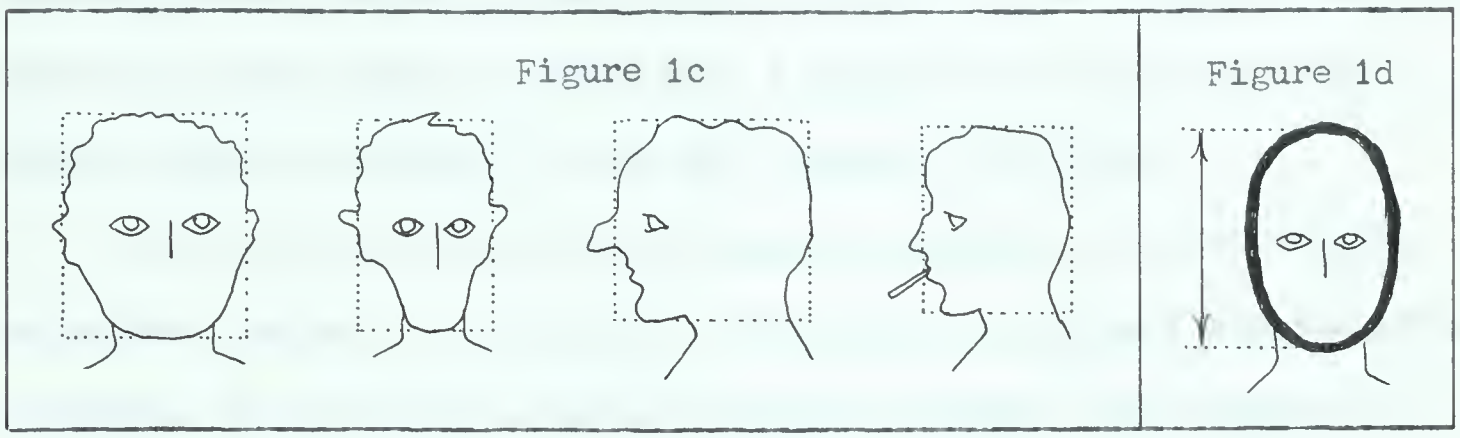


Figure 1c illustrates the method of area-of-enclosing-rectangles which is used to compare heads of obviously different widths (A = LW). Ears, noses, and other protuberances which do not add to the general mass of the head are ignored. Figure 1d shows the method of choosing a point of measurement when a head has line-emphasis: the mid-point of the thickness of the line is chosen.

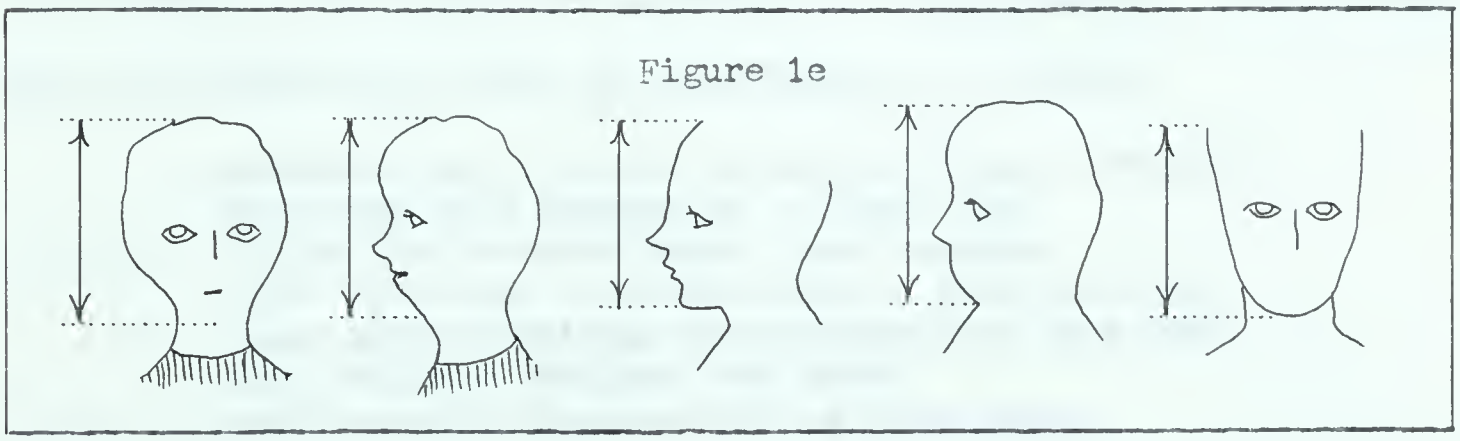


Figure 1e illustrates types of indistinct and incomplete heads, which require arbitrary judgments. Incompletion to a greater extent than these would result in the subject being disqualified. In estimating the point of a missing "chin," from which measurement is to be taken, the point half-way from the "mouth" to the border of the body "clothing" is taken. When one head is complete and detailed and the other highly incomplete, disqualification would result.

C. Plan of Research

Choice of differing adjustment groups. To enable the examination of measure validity, two pairs of differing adjustment groups were chosen. The Junior High School Sample[1] was divided into one pair of groups according to teachers' ratings of their students' adjustment: the Normal Adjustment Sample of 105 children and the Troubled Adjustment Sample of forty-six children. In the second pair of groups, one group -- the Delinquent Sample of twenty-five children -- was formed by subjects drawn from the regular case loads of the Edmonton City Welfare Department probation officers, and the other group -- the Non-delinquent Sample of twenty-five children -- was formed by matching each Delinquent Sample subject with a subject from the Junior High School Sample according to sex, age, height, and weight.

The teachers were asked to judge the children they had taught, as either "normal" or "troubled." This type of judgment was considered practical in the light of usual guidance procedure, the referral decision of the teacher. Also, this type of bi-polar judgment is more defensible psychometrically than alternate types of judgment, such as the five-point rating scale. So that there might be some core-consistency in the teachers' conceptions of adjustment, the following list of criteria was given to the teachers to consider.

> Evidently not accepted by many of their classmates.
> Not happy with themselves or their lot.
> Failing and anxious about their studies.
> "Odd" children: unpredictable in their behavior.
> Could have benefitted from counselling this year.
> Were behavior problems this year.
> Would benefit from counselling next year.

---

[1] The Junior High School Sample, N = 151, was drawn from the grade seven and grade nine classes in two schools in the City of Edmonton, School M and School W.

The writer decided that one teacher's rating of a subject as "troubled" would be taken as binding, even if perhaps only one or two of the above criteria had been considered. It was thought that one such judgment might be the result of good insight on the part of that one teacher.

The Delinquent Sample was drawn from the regular case loads of the City Welfare probation officers during May and June of 1960. Subjects were asked to co-operate in the course of their regular interview schedules at the Department.

In choosing the Non-delinquent Sample, some latitude was allowed in the degree of match between individuals; age within three months (In two of the matches this had to be expanded to eight months because of difficulty in finding a match), height within three inches, and weight within five pounds. Sexes were, of course, identical. This search for matches was randomized by the writer's examining of a different class for each subsequent match. The categorizations "normal" and "troubled" were ignored during this search.

Choice of differing grade level groups. To enable the examination of the influence of drawing development in D-O-W-S test performance, four samples were formed -- the Grade Three Sample of seventy children, the Grade Five Sample of sixty-four children, the Grade Seven Sample of seventy-five children, and the Grade Nine Sample of seventy-six children.

While the inclusion of a grade one sample and a grade eleven sample would have completed the range of ages of children in grade school, the difficulties in administration would have been severely increased. It was thought that the grade one students might have much

difficulty in understanding and carrying through the drawing tasks. Sampling grade eleven classes would have involved considerable inconvenience to the writer and other people. Moreover, it was thought that the four samples chosen would represent adequately the complete range by presenting a sufficiently wide span of ages and therefore of drawing development differences.

Subjects for these samples were drawn variously from three schools in the Edmonton Public School system: the Grade Three Sample, from School S and School W; The Grade Five Sample, from School M, School S, and School W; the Grade Seven Sample and the Grade Nine Sample, from School M and School W.

Choice of differing socio-economic status groups.

The writer formed two samples with which to investigate the influence in drawing performance of differences of socio-economic status, which Hammer (1953) detected in his study. Hammer found differences in drawings significant at the .01 level between his groups of 148 negro and 252 white children whose home districts were rated as different in socio-economic status.

Two of the city districts in which were situated two of the schools contributing subjects to the present study, were considered generally to be different in socio-economic status -- the districts had been referred to as "working class" and "professional." Subjects were selected from these schools for this investigation. The grade seven classes of the schools formed these groups, twenty-one children in the School M Sample and fifty-four children in the School W Sample.

The grade seven classes only were chosen to represent their schools because in School M a quarter of the grade nine students,

being transported to the school from a military base outside the city, were from homes probably not typical of the district with regard to socio-economic status. The grade five class in School M, contributing only nine subjects, was thought too small to be adequately representative of the children of that grade level at the school.

Choice of groups differing in sex.

The writer formed six samples with which to investigate the influence in drawing performance of differences in sex. The subjects of the Delinquent Sample, the Non-delinquent Sample, and the Troubled Adjustment Sample were each divided according to sex. By the use of these samples the writer expected that an optimum degree of heterogeneity was achieved so that if sex difference was a factor in drawing performance it would be detected.

The division formed the Delinquent Girls Sample (N = 9), the Delinquent Boys Sample (N = 16), the Non-delinquent Girls Sample (N=9), the Non-delinquent Boys Sample (N = 16), the Troubled Girls Sample (N = 18), and the Troubled Boys Sample (N = 28).

Choice of measures from the school records.

Five measures were recorded for use in the present study from information contained in the school records about children in the Junior High School Sample (N = 151).

(a) Intelligence. The most recent intelligence quotient listed was taken directly as a measurement of intelligence. The writer thought that a fresh testing, which would necessarily be with a group-administered test, would not give a measurement of intelligence greatly superior with regard to freedom from contaminating factors than the measurement already made. There was a high degree of consistency

with regard to test form and year of testing in the recorded ratings. Ninety-two per cent of the subjects had been tested with the Laycock Mental Ability Test; six and one-half per cent, with the Otis Quick Scoring Mental Ability Test; one per cent, with the Detroit Beginning First Grade Intelligence Test. Seventy-five per cent of the subjects had been tested in grade five; ten per cent, in grade nine; six and one-half per cent, in grade six; six per cent, in grade seven; two per cent, in grade eight; one-half per cent, in grade one. Intelligence here can roughly be interpreted as measurement by the Laycock Mental Ability Test, given in grade five or later.

(b) Age. This measure in months was taken from the listings in the cumulative records. In nearly all cases the ages had been checked as correct against the subjects' birth certificates.

(c) Height. This measure in inches was taken from the school nurses' most recent measurements -- in all cases the measurement had taken place in the Spring of 1960.

(d) Weight. This measure, in pounds, had the same source as height.

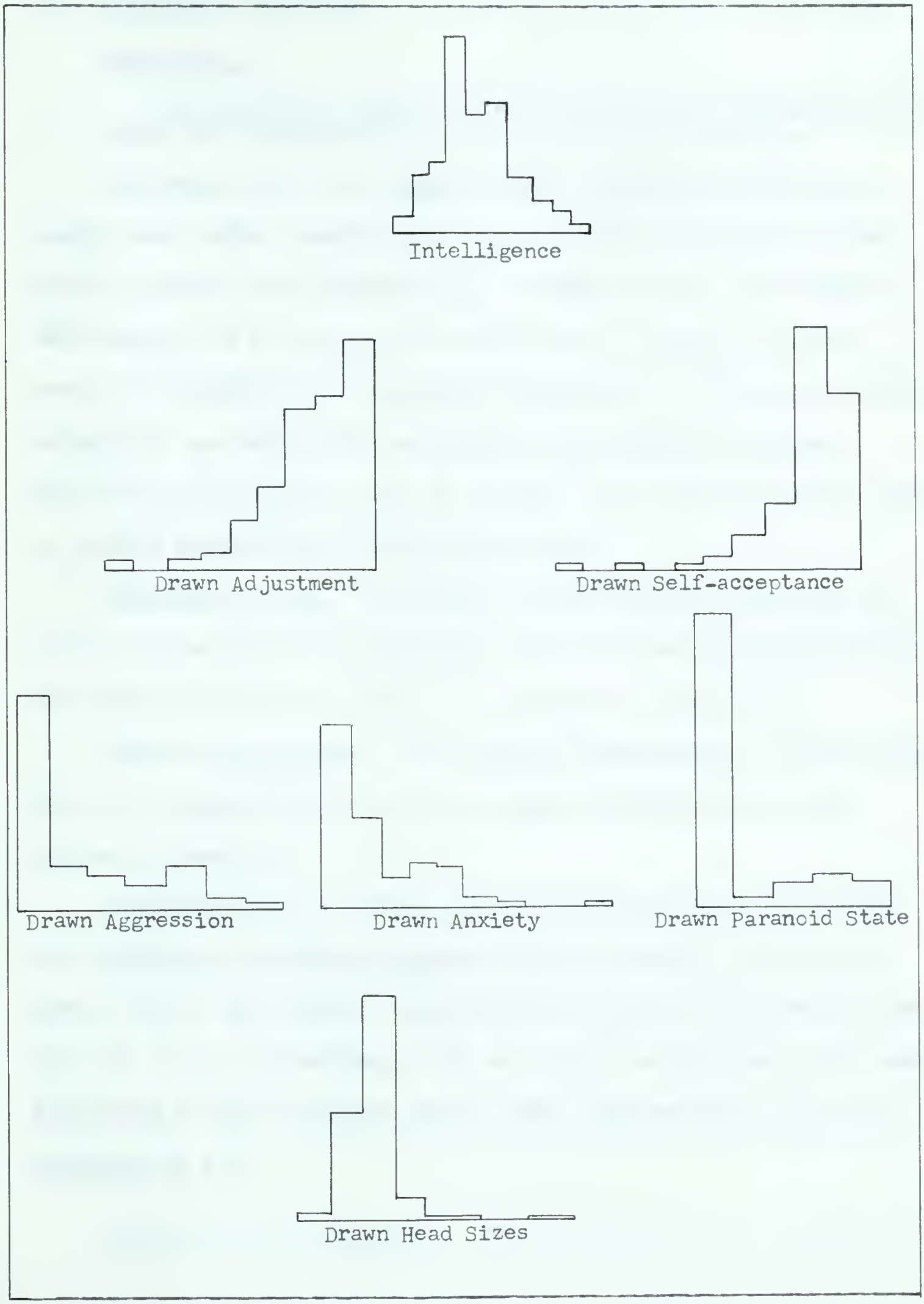
(e) Socio-economic status. To estimate Socio-economic status the writer used a classification system like that of Warner and associates (1949), but limited to a consideration of the family's occupations as listed in the cumulative records. The subjects were classified as upper, middle, or lower, according to a blind rating of the occupations of their families by the writer. The family occupations and their classifications are listed in the Appendix.

Age, height, and weight measurements were also recorded for each subject of the Delinquent Sample. Here the amounts reported by the

subjects on the cover of their test booklets were accepted without other than a cursory check by the probation officers as to the reasonable accuracy of the reporting. The probation officers did not report any probable inaccuracies.

Choice of statistical tests. The distributions of scores of the D-O-W-S test measures could not be assumed to be normal distributions in that the nature of the characteristics being measured was unknown; moreover, the distribution of scores of the D-O-W-S test measures, yielded by the subjects of the Junior High School Sample (N = 151), produced histograms which were obviously not normal distributions, while the histogram of scores of intelligence did resemble a normal distribution and could be defended theoretically. (These data are presented in Figure 2, page 49.) For these reasons the writer chose non-parametric statistical tests to examine the samples with regard to the D-O-W-S test measures and parametric tests to examine the samples with regard to Intelligence.

Figure 2. Distribution of Scores of Subjects in the Junior High School Sample (N = 151) for Some Measures of the Present Study.



D. The Hypothesis

Two hypotheses were set up, against which to test the validity of the D-O-W-S test measures.

Hypothesis 1.

The Delinquent Sample and the Non-delinquent Sample will not differ with regard to each of the D-O-W-S test measures.

Statistical Test. The non-parametric Kolmogorov-Smirnov two-sample test, which considers the largest of the differences of cumulative frequency distributions (D), was chosen because the scores of the measures are in the main on no more than an ordinal scale and cannot be considered to be normally distributed, as discussed earlier on page 48, and because the two samples are independent groups. Tate and Clelland (1957, page 93) consider the Kolmogorov-Smirnov test to be more powerful than the chi-square test.

Significance Level. The level of significance is taken as .05, which is suitable for an exploratory study such as the present study. The number of subjects in each of the samples is twenty-five.

Sampling Distribution. The sampling distributions of each of the measures is approximated by the chi-square distribution with two degrees of freedom.

Rejection Region. Because the null hypothesis does not predict the direction of differences between the two samples, a two-tailed test is used. The region of rejection is a D equal to or greater than 37.0 per cent. The reference here is to Tate and Clelland (1957, page 138) whose formula and table permit direct consideration of the significance of a D.

Hypothesis 2.

The Troubled Adjustment Sample and the Normal Adjustment Sample will not differ with regard to each of the D-O-W-S test measures.

Statistical Test. The Kolmogorov-Smirnov test is chosen for the same reasons given in Hypothesis 1.

Significance Level. The level of significance is again taken as .05. The number of subjects in the Troubled Adjustment Sample is forty-six; the number of subjects in the Normal Adjustment Sample is 105.

Sampling Distribution. The sampling distributions of each of the measures is approximated by the chi-square distribution with two degrees of freedom.

Rejection Region. Because the null hypothesis does not predict the direction of differences between the two samples, a two-tailed test is used. The region of rejection is a D equal to or greater than 24.1 per cent.

E. Procedure.

The research instrument of the present study was the D-O-W-S test, described earlier on pages 33 to 42. The procedure used by the writer in administering the test and assembling data follows.

Preparation of the examiners. Individual interviews were held with the probation officers before the beginning of testing for the purpose of explaining the study and the standard administration of the D-O-W-S test. The teachers were oriented previous to the testing of their classes.

Standardized administration. With the school classes the test was

administered by the writer in single class periods of about thirty minutes, with the usual composition of the classes, in familiar rooms, and in all cases except one with the classes' regular teacher as supervisor. Motivation of the school children was structured by telling the subjects that they were being asked to take part in a drawing survey to see how the students of their school drew in comparison with the students of other Edmonton schools, and that the results of the survey would not affect their marks. The instructions presented in the Appendix were followed.

With the Delinquent Sample the test was individually administered in the private interview rooms of the City Welfare Department, by the subjects' probation officers, and in periods of time varying from as short as twenty minutes to as long as fifty-five minutes. Motivation of the delinquent children was structured by telling the subject that the survey was to find out how he drew, and that an art teacher would be looking over the drawings afterwards, so that, if he wished, he could have an evaluation of his talent in art. The instructions presented in the Appendix were followed.

Collection of data and disqualification. The information from the school records was collected first. If it was found that a subject had had no rating of intelligence, he was dropped from the samples. Of the 413 school subjects who had been given the D-O-W-S test, forty-two were disqualified on this count. Of the 229 junior high school subjects, eighteen were dropped.

The booklets were then inspected for incompletions. The criterion for disqualifying a booklet for incompletion was set as the failure to draw the four heads of self complete enough so that Drawn Self-acceptance could be calculated. Of the 371 subjects for which there was an intelligence rating, eighty-six were disqualified. Of the 211 junior high school subjects, sixty were dropped. These sixty however were retained in the present study to become the Disqualified Junior High School Sample.

Table I lists the samples of the present study and their numbers of subjects.

Table I: The Samples of the Present Study.

The Junior High School Sample, N = 151	The Delinquent Sample, N = 25
The Disqualified Junior High School Sample, N = 60	The Non-delinquent Sample, N = 25
The Grade Three Sample, N = 70	The Delinquent Girls Sample, N = 9
The Grade Five Sample, N = 64	The Delinquent Boys Sample, N = 16
The Grade Seven Sample, N = 75	The Non-delinquent Girls Sample, N = 9
The Grade Nine Sample, N = 76	The Non-delinquent Boys Sample, N = 16
The School M Sample, N = 21	The Troubled Girls Sample, N = 18
The School W Sample, N = 54	The Troubled Boys Sample, N = 28
The Troubled Adjustment Sample, N = 46	
The Normal Adjustment Sample N = 105	

Standardized scoring. The writer scored all 310 test booklets of the various samples in a continuous period of three weeks. Scoring

was carried out on the booklets for one measure at a time. Drawn Head Sizes and Drawn Self-acceptance scores were recorded first, followed by the measures of psychopathology. To avoid the influence of fatigue, the writer observed marking periods of thirty minutes duration and rest intervals of ten minutes. The writer maintained the objective of scoring the same number of test booklets during a marking period as had been scored in the preceding marking period. The number was altered, of course, according to the measure being scored.

CHAPTER IV

RESULTS AND DISCUSSION

A. Observations

Four non-statistically supported observations are made.

(1) Group administration of the D-O-W-S test is practicable and not susceptible to unusual contaminating influences, and individual administration of the test is satisfactory even without the use of a constantly present examiner.

Only one of the sixteen school classes examined failed to give full co-operation and exhibit good test behaviour. This class, a grade nine class in W school whose regular teacher was not in attendance, contained several students who evidently did not accept the test or the motivation, shown by their erratic work habits and superfluous talking.

The instructions appeared to be adequate for standard administration of the test.

The probation officers reported that all the delinquent children accepted the test as a serious exercise and gave creditable performances of test behaviour. The probation officers reported that they sometimes departed from the instructions in motivating some of the children and in the timing but that the instructions were observed in spirit.

(2) The time one marker takes to score a set of thirty D-O-W-S test booklets for all of the measures appears to be forty minutes, after the marker becomes experienced. This would appear to be a practical length of time.

(3) Most of the descriptions of the indices of the D-O-W-S test

measures appear to be understandable, precisely defined, and practicable. The writer employed a second marker, a Bachelor of Arts graduate in psychology, to score a set of twenty-five test booklets and give her impression of the suitability of the indices' descriptions. She agreed that most of the indices were adequately described, noting that indices AGG-6 and ANX-2 were the least empirically applicable because the drawing characteristic being judged was of a non-dichotomous nature. The occasional arbitrary decision in determining head sizes for the calculation of Drawn Self-acceptance was a similarly weakening factor.

Inter-marker reliability in test scoring was not examined.

(4) There appeared to be a marked tendency for the elementary children who were examined to draw figures which were smaller in size to those drawn by the older children examined, but no data was collected in this regard. This tendency would have the effect of raising the scores of Drawn Adjustment, because fewer indices would be included or observed in small figures in comparison to large figures. The tendency would also raise the scores of Drawn Head Sizes and Drawn Self-acceptance, because small figures would have small heads which in comparison to other small heads would likely be scored as equal in size. The tendency would lower the scores of Drawn Aggression, Drawn Anxiety, and Drawn Paranoid State, because fewer indices would be included or observed in small figures in comparison to large figures.

B. Results and Discussion of Testing the Hypotheses

Hypothesis 1. Table II presents a summary of the statistical data from the testing of Hypothesis 1 and from an examination of some

aspects of the samples involved. Tables of more complete data are found in the Appendix.

The data in Part A of Table II show that Hypothesis 1 is rejected with regard to Drawn Adjustment, Drawn Aggression, and Drawn Paranoid State because differences exist between the samples at or beyond the .05 level of significance. These measures are thus validated in terms of the apparent psychological differences existing between the two samples. An examination of the distributions of these measures, presented in the Appendix, shows that the directions of differences between the samples are consistent and in the directions anticipated by the rationale of the measures. The cumulative percentages of the Delinquent Sample scores of Drawn Adjustment are consistently higher than the Non-delinquent Sample scores of Drawn Adjustment and the Delinquent Sample scores of Drawn Aggression and Drawn Paranoid State are consistently lower than the respective scores of the Non-delinquent sample.

This part of Table II also indicates that Hypothesis 1 is upheld with regard to the remaining D-O-W-S test measures, which are not validated.

Part B of Table II indicates that a null hypothesis involving the differences between the Delinquent Sample and the Non-delinquent Sample with regard to the measures used as matching criteria would be upheld at the .05 level of significance. (The region of rejection is the same as in Hypothesis 1, a D equal to or greater than 37.0 per cent.) This finding supports the goodness of match of the two samples, at least in the aspects here.

Table II: Summary of Data from the Testing of Hypothesis 1 and from an Examination of Sample Aspects.

Part A. Comparison of the Delinquent Sample (N = 15) and the Non-delinquent Sample (N = 15) with Regard to the D-O-W-S Test Measures.

Measure	Statistic	Sig.*
Drawn Adjustment	D**= 64.0	<.01
Drawn Aggression	D = 72.0	<.01
Drawn Anxiety	D = 8.0	>.20
Drawn Paranoid State	D = 56.0	<.01
Drawn Self-acceptance	D = 20.0	>.20
Drawn Head Sizes	D = 14.0	>.20

Part B. Comparison of the Delinquent Sample (N = 25) and the Non-delinquent Sample (N = 25) with Regard to Measures Used as Matching Criteria.

Measure	Statistic	Sig.
Age	D = 12.0	>.20
Height	D = 16.0	>.20
Weight	D = 8.0	>.20

Part C. Comparison of the Non-delinquent Sample (N = 25) and the Junior High School Sample (N = 151) with Regard to Several Measures.

Measure	Statistic	Sig.
Drawn Adjustment	D = 11.2	>.20
Drawn Aggression	D = 20.5	>.20
Drawn Anxiety	D = 14.8	>.20
Drawn Paranoid State	D = 16.6	>.20
Drawn Self-acceptance	D = 3.9	>.20
Drawn Head Sizes	D = 9.3	>.20
Age	D = 11.7	>.20
Height	D = 8.4	>.20
Weight	D = 15.3	>.20
Intelligence	t***= .32	>.20
Proportion in Grades VII and IX	χ^2 = .01	>.20

* Level of significance.
** Kolmogorov-Smirnoff largest difference in cumulative percentages.
*** Student's t.

Part C of Table II presents data which show that a null hypothesis involving differences between the Non-delinquent Sample and the Junior High School Sample with regard to all available measures would be rejected at the .05 of significance in all cases. (The regions of rejection would be a D equal to or greater than 29.4, a t equal to or greater than 1.98 and a χ^2 equal to or greater than 3.84.) These findings indicate that the Non-delinquent Sample is representative of the Junior High School Sample with regard to the characteristics here.

Thus, it appears here that three of the six D-O-W-S test measures are validated by the use of samples which showed goodness-of-match, while the Non-delinquent Sample is representative of the Junior High School Sample.

Hypothesis 2. Table III presents a summary of the statistical data from the testing of Hypothesis 2 and from an examination of some aspects of the samples involved. Tables of more complete data are found in the Appendix.

The data in Part A of Table III show that Hypothesis 2 is rejected with regard to Drawn Adjustment and Drawn Self-acceptance because differences exist between the samples at or beyond the .05 level of significance. These measures are thus validated in terms of the apparent psychological differences existing between the two samples. An examination of the distributions of these measures, presented in the Appendix, shows that the directions of differences between the samples are consistent and in the direction anticipated by the rationale of the measures. The cumulative percentages of the Troubled Adjustment Sample scores are consistently higher than those of the Normal Adjustment Sample scores in both measures.

Table III. Summary of Data from the Testing of Hypothesis 2 and from an examination of Sample Aspects.

Part A. Comparison of the Troubled Adjustment Sample (N = 46) and the Normal Adjustment Sample (N = 105) with Regard to the D-O-W-S Test Measures.			Part B. Comparison of the Troubled Adjustment Sample (N = 46) and the Normal Adjustment Sample (N = 105) with Regard to Other Measures.		
Measure	Statistic	Sig.	Measure	Statistic	Sig.
Drawn Adjustment	D = 25.8	=.05	Intelligence	t = 4.96	$<.01$
Drawn Aggression	D = 21.7	=.10	Age	D = 36.4	$<.01$
Drawn Anxiety	D = 6.0	$>.20$	Height	D = 26.1	=.05
Drawn Paranoid State	D = 15.1	$>.20$	Weight	D = 22.2	=.05
Drawn Self-Acceptance	D = 27.4	=.02	Proportion of Girls and Boys	χ^2= 2.04	$>.20$
Drawn Head Sizes	D = 6.7	$>.20$	Proportion in Grades VII and IX	χ^2= 10.93	$<.01$

Part B of Table III presents data which show that a null hypothesis involving differences between the Troubled Adjustment Sample and the Normal Adjustment Sample with regard to other available measures would be rejected at the .05 level in all cases except the proportion of sexes. (The regions of rejection would be a t equal to or greater than 1.98, a D equal to or greater than 24.1, and a χ^2 equal to or greater than 3.84.)

The finding of a difference between the samples with regard to intelligence might indicate one or more of three possibilities:

(1) The samples, as well as showing differences in intelligence, showed different levels in the degrees of the subjects' school adjustments; therefore, the levels of adjustment are validly reflected in the scores of Drawn Adjustment and Drawn Self-acceptance.

(2) The two drawing test measures are measures of intelligence, which is not unreasonable when one considers that an application of drawing tests is for the measurement of intelligence.

(3) The teachers when making judgments about the adjustments of the subjects of the two samples interpreted adjustment, perhaps unwittingly, in the light of scholastic attainment rather than the emotional aspects of adjustment. Such biased judgments would cause the samples to be formed so as to reflect this difference in intelligence because the ratings of intelligence in the subjects' cumulative records would likely correlate positively and highly with scholastic attainment.

The first explanation is, of course, in line with the rationale of the D-O-W-S test measures and this thesis.

The second explanation is investigated in a comparison of the two school samples and in a study of intercorrelations, later in this chapter.

The third explanation cannot be clearly discounted. To avoid such a bias when asking for teacher judgments is difficult, perhaps even undesirable. A large number of the school children who exhibit obvious emotional maladjustments will likely also exhibit difficulties in their school work, so that consideration of one apart from the other is impossible. However, to investigate to some extent the possibility

of teacher bias here, the writer interviewed separately each of the seven participating junior high school teachers after they had done the judging of their students' adjustments. The teachers were asked which of the criteria listed on page 43 or any other criteria had been considered by them in making their judgments. Each of the items in the list was considered by at least one teacher; all the teachers said they had considered items one, five, and seven; only three teachers reported that they had considered item three, which directly involves scholastic attainment. No other criteria were volunteered by the teachers.

It appears that the teachers in forming the Troubled Adjustment Sample and the Normal Adjustment Sample did not make judgments obviously influenced by the consideration of the subjects' scholastic attainment and, thereby, of intelligence.

The finding of differences between the samples with regard to age, height, and weight is related to the difference in proportion of subjects in grade seven and grade nine. There are significantly more grade nine students in the Troubled Adjustment Sample than in the Normal Adjustment Sample. The influence of this difference in samples is investigated in a study of drawing development later in this chapter.

C. Results and Discussion of an Examination of the Influence on the Samples of Disqualification of Subjects.

Table IV presents the summary of data from an examination of the Disqualified Junior High School Sample and the Junior High School Sample with regard to several aspects. Tables of more complete data are found in the Appendix.

Table IV: Summary of Data from an Examination of Aspects of the Disqualified Junior High School Sample (N = 60) and the Junior High School Sample (N = 151).

Measure	Statistic	Sig.	Measure	χ^2	Sig.
Intelligence	t = .93	> .20	Proportion of Girls and Boys	.02	> .20
Age	D = 11.1	> .20	Proportion in Grades VII and IX	.81	> .20
Height	D = 12.7	> .20	Proportion in School M and School W	.16	> .20
Weight	D = 10.3	> .20	Proportion rated "Normal" and "Troubled"	2.14	= .20

The data in Table IV indicate that a null hypothesis involving differences between the Disqualified Junior High School Sample and the Junior High School Sample with regard to all available measures would be upheld at the .05 level in all cases. (The regions of rejection would be a t equal to or greater than 1.98; a D equal to or greater than 20.7; a χ^2 equal to or greater than 3.84.) It is therefore concluded that the samples are not significantly different with regard to these aspects, and that in the disqualification process there was no appreciable loss of heterogeneity from the Junior High School Sample, at least in as far as these measures are concerned.

However, the rate of disqualification with the present criterion -- 28.5 per cent of the gross junior high school group, and as high as 53.3 per cent of the individual classes -- would be impractically high to enable a school guidance program to operate efficiently.

D. Results and Discussion of an Examination of Drawing Development Influence on the D-O-W-S test measures.

Table V presents a summary of data from an examination of the four grade samples with regard to the D-O-W-S test measures. Tables of more complete data are found in the Appendix. The examination was precipitated by the observation of apparent differences in the drawing characteristics of children of different grades and the finding of a difference in proportion of the grade seven students and the grade nine students within the Troubled Adjustment Sample and the Normal Adjustment Sample, presented in Table III on page 58.

Table V: Summary of Data from an Examination of the Grade Samples with Regard to the D-O-W-S Test Measures.

Measure	III-V*	III-VII	III-IX	V-VII	V-IX	VII-IX
Drawn Adjustment	D = 18.3 Sig.>.20	D = 16.9 Sig.>.20	D = 10.4 Sig.>.20	D = 7.5 Sig.>.20	D = 12.7 Sig.>.20	D = 8.6 Sig.>.20
Drawn Aggression	D = 25.9 Sig.=.05	D = 11.6 Sig.>.20	D = 21.6 Sig.=.10	D = 16.7 Sig.>.20	D = 7.2 Sig.>.20	D = 16.8 Sig.>.20
Drawn Anxiety	D = 23.0 Sig.=.10	D = 24.0 Sig.=.05	D = 32.4 Sig.<.01	D = 7.3 Sig.>.20	D = 10.6 Sig.>.20	D = 16.3 Sig.>.20
Drawn Paranoid State	D = 5.9 Sig.>.20	D = 10.0 Sig.>.20	D = 28.5 Sig.<.01	D = 5.0 Sig.>.20	D = 22.6 Sig.=.10	D = 18.6 Sig.=.20
Drawn Self-acceptance	D = 22.2 Sig.=.10	D = 17.3 Sig.>.20	D = 14.6 Sig.>.20	D = 12.6 Sig.>.20	D = 17.2 Sig.>.20	D = 10.5 Sig.>.20
Drawn Head Sizes	D = 10.0 Sig.>.20	D = 9.0 Sig.>.20	D = 5.1 Sig.>.20	D = 7.7 Sig.>.20	D = 5.1 Sig.>.20	D = 7.9 Sig.>.20
Regions of Rejection A D Equal to or Greater Than	23.5	22.6	22.6	23.1	23.1	21.8

* III: the Grade Three Sample (N = 70)
V: the Grade Five Sample (N = 64)
VII: the Grade Seven Sample (N = 75)
IX: the Grade Nine Sample (N = 76)

The data in Table V indicate that a null hypothesis involving differences among the grade samples with regard to each of the D-O-W-s test measures would be upheld at the .05 level except for four comparisons: between the Grade Three Sample and the Grade Five Sample with regard to Drawn Aggression, between the Grade Three Sample and the Grade Seven Sample with regard to Drawn Anxiety, and between the Grade Three Sample and the Grade Nine Sample with regard to Drawn Anxiety and Drawn Paranoid State.

From the above evidence it would appear that the Grade Three Sample consistently differs from the other samples, although in various ways. However, a study of the distributions presented in the Appendix shows that the directions of differences between the cumulative percentages are not consistent among the samples with regard to the three measures mentioned above. Whereas the directions of differences are positive in comparing the Grade Three Sample to the other grade samples with regard to Drawn Paranoid State and in comparing the Grade Three Sample and the Grade Five Sample with regard to Drawn Aggression, the directions are negative in comparing the Grade Three Sample to the Grade Five Sample and Grade Seven Sample with regard to Drawn Anxiety. The directions of differences of other comparisons are mixed.

These findings do not present clear evidence of a pattern of differences among the grade samples and, thus, a developmental influence is not shown with regard to the D-O-W-S test measures. Grade level difference can be discounted as an influence in the testing of Troubled Adjustment Sample and the Normal Adjustment Sample.

E. Results and Discussion of an Examination of the Influence on the D-O-W-S test measures of differences in Socio-economic status.

Table VI presents a summary of data from an examination of aspects of the two school samples thought to differ in socio-economic status. Tables of more complete data are found in the Appendix.

From the data in Table VI it can be concluded that, although the two samples do differ in socio-economic status and intelligence, significant at the .05 level, a null hypothesis involving differences between the samples with regard to the D-O-W-S test measures would be upheld at the .05 level. (The regions of rejection are a χ^2 equal to or greater than 3.84, a t equal to or greater than 2.00, and a D equal to or greater than 34.9.)

It thus appears that differences in socio-economic status do not significantly influence performance on the D-O-W-S test.

Table VI: Summary of Data from an Examination of Aspects of the School M Sample (N = 21) and the School W Sample (N = 54).

Measure	Statistic	Sig.	Measure	Statistic	Sig.
Socio-economic Status	$\chi^2 = 26.30$	$<.01$	Drawn Anxiety	D = 8.0	$>.20$
Intelligence	t = 2.14	$=.05$	Drawn Para-noid State	D = 5.1	$>.20$
Drawn Adjustment	D = 9.5	$>.20$	Drawn Self-acceptance	D = 7.9	$>.20$
Drawn Aggression	D = 6.9	$>.20$	Drawn Head Sizes	D = 2.9	$>.20$

The finding of a difference with regard to intelligence but no differences with regard to the D-O-W-S test measures discounts the second explanation of the results of testing Hypothesis 2, page 57. Intelligence does not appear to be a factor influencing performance on the D-O-W-S test.

F. Results and Discussion of an Examination of the Influence on the D-O-W-S Test Measures of Differences in Sex.

Table VII presents a summary of the data from an examination of the three pairs of girls' and boys' samples with regard to each of the D-O-W-S test measures. Tables of more complete data are found in the appendix.

The data of Table VII indicate that difference in sex is not a factor in influencing performance on the D-O-W-S test; a null hypothesis involving comparisons of the girls' and boys' samples with regard to the D-O-W-S test measures would be upheld at the .05 level of significance.

Table VII: Summary of Data from an Examination of the Girls' and Boys' Samples with Regard to the D-O-W-S Test Measures.

Measure	The Delinquent Girls' Sample (N = 9) Compared to the Delinquent Boys' Sample (N = 16)	The Non-delinquent Girls' Sample (N = 9) compared to the Non-delinquent Boys' Sample (N = 16)	The Troubled Girls' Sample (N = 18) compared to the Troubled Boys' Sample (N = 28)
Drawn Adjustment	D = 36.8 Sig. $>$ .20	D = 25.6 Sig. $>$ .20	D = 13.6 Sig. $>$ .20
Drawn Aggression	D = 36.8 Sig. $>$ .20	D = 24.4 Sig. $>$ .20	D = 20.2 Sig. $>$ .20
Drawn Anxiety	D = 27.1 Sig. $>$ .20	D = 22.2 Sig. $>$ .20	D = 9.8 Sig. $>$ .20
Drawn Paranoid State	D = 47.9 Sig. = .20	D = 22.2 Sig. $>$ .20	D = 5.7 Sig. $>$ .20
Drawn Self-acceptance	D = 23.0 Sig. $>$ .20	D = 14.7 Sig. $>$ .20	D = 20.5 Sig. $>$ .20
Drawn Head sizes	D = 14.3 Sig. $>$ .20	D = 5.6 Sig. $>$ .20	D = 7.5 Sig. $>$ .20
Regions of Rejection: a D equal to or greater than	56.7	56.7	41.1

G. Results and Discussion of an Examination of Relationships among the D-O-W-S Test Measures and Intelligence.

Table VIII presents data from an examination of relationships among the D-O-W-S test measures and intelligence as obtained from the Non-delinquent Sample.

Table VIII: Relationships among the D-O-W-S Test Measures and Intelligence, in Spearman Rank Correlation Coefficients, as obtained from the Non-delinquent Sample (N = 25).

	Drawn Self-acceptance	Drawn Aggression	Drawn Anxiety	Drawn Paranoid State	Drawn Head Sizes	Intelligence
Drawn Adjustment	.52 Sig.<.01	−.98 Sig.<.01	−.92 Sig.<.01	−.50 Sig.=.01	−.34 Sig.>.05	.48 Sig.=.05
Drawn Self-Acceptance		−.18 Sig.>.05	−.02 Sig.>.05	−.01 Sig.>.05	−.32 Sig.>.05	.04 Sig.>.05
Drawn Aggression			.20 Sig.>.05	.20 Sig.>.05	.35 Sig.>.05	−.48 Sig.=.05
Drawn Anxiety				.48 Sig.=.05	.27 Sig.>.05	−.41 Sig.=.05
Drawn Paranoid State					.07 Sig.>.05	−.20 Sig.>.05
Drawn Head Sizes						−.14 Sig.>.05

The data of Table VIII indicate that a null hypothesis with regard to relationships among the D-O-W-S test measures and intelligence would be rejected in eight of the twenty-one cases, at the .05 level of significance. (The region of rejection is a r_S equal to or greater than

.40. This is a two-tailed test.) Drawn Head Sizes appears to have no significant correlation with any of the measures here; hence, its lack of validity found previously is substantiated. The significant and negative correlations of Drawn Adjustment with Drawn Aggression, Drawn Anxiety, and Drawn Paranoid State are not surprising in that the three latter measures are comprised as units by, and in an inverse relationship to, Drawn Adjustment. The finding of a significant correlation of Drawn Adjustment and Drawn Self-acceptance but non-significant correlations of Drawn Self-acceptance with the three unit measures of Drawn Adjustment reflects the findings in regard to testing Hypothesis 2, presented in Table III; the two samples differed with regard to Drawn Adjustment and Drawn Self-acceptance, but not with regard to the unit measures of Drawn Adjustment. The interrelationships of the unit measures of Drawn Adjustment are all positive, which would be anticipated by the rationale of the measures which considers them each as expression of maladjustment.

The significant correlations of intelligence with the three D-O-W-S test measures refute the second of the possibilities which arose in explaining the results of testing Hypothesis 2, page 57. If the D-O-W-S test was measuring intelligence in the manner of the Goodenough test, the signs of the correlations here would be reversed. In the Goodenough test the number of indices present directly affects the score of intelligence, while in the D-O-W-S test the number of indices present inversely affects Drawn Adjustment and directly affects the unit measures of Drawn Adjustment. It would seem, then, that further to the conclusion on page 66, that the D-O-W-S test does not measure intelligence in the manner of the Goodenough test.

CHAPTER V

CONCLUSION

The suitability of the D-O-W-S test for school guidance application is supported by the favorable observations of the test's adequacy with regard to administration and scoring.

As a device to measure group differences in personality characteristics, the D-O-W-S test is shown to have some validity: the measure Drawn Adjustment is shown to differentiate between both pairs of adjustment samples; Drawn Self-acceptance is shown to differentiate between the two school adjustment samples; Drawn Aggression and Drawn Paranoid State are to shown to differentiate between the Delinquent Sample and the Non-delinquent Sample.

However, as a device for guidance selection on an individual basis, the D-O-W-S test is not shown to be efficient enough. Because much overlapping occurred in the distribution of scores an entirely effective cutting point cannot be chosen. Moreover, the present high rate of disqualification of subjects would make the D-O-W-S inefficient in practical use.

The samples of the present study are shown to be adequate: the match of the Delinquent Sample and the Non-delinquent Sample, the representativeness of the Non-delinquent Sample with the Junior High School Sample, the retention by the Junior High School Sample of heterogeneity despite disqualification of subjects, are all substantiated.

The results of the present study are not shown to be contaminated by developmental differences, socio-economic status differences, sex differences, or intelligence.

CHAPTER VI

LIMITATIONS

A. The Samples

The Junior High School Sample might not be representative of the junior high school population because it did not draw any subjects from grade eight classes in the schools. As a result, the influence of characteristics perhaps peculiar of children at the grade eight level in school has not been included in the present study. However, the Junior High School Sample does include a wide range of ages and is shown to have heterogeneity -- the histogram of intelligence on page 46 suggests a normal distribution of intelligence, and the School M and School W sample, which compose the Grade Seven Sample (half of the Junior High School Sample), are shown to differ with regard to intelligence and socio-economic status.

The Grade Three Sample and the Grade Five Samole were not examined for the presence of any possible contaminating factors.

The Non-delinquent Sample has the same limitation as the Junior High School Sample. Because there were no grade eight students from which to draw subjects, the Non-delinquent Sample might not be representative of the junior high school populations, and, moreover, it might not be a good match with the Delinquent Sample. Eighteen of the twenty-five subjects of the Delinquent Sample were listed as being in grade eight. Although it is likely that some subjects in both samples had repeated or advanced a grade level during their school careers so that a match by age of the delinquent and non-delinquent children would be satisfactory, most subjects would have not repeated

or advanced. A better match would have been between children of the same grade level and age, as well as of the same height, weight and sex.

The Grade Nine Sample might lack heterogeneity because of the high rate of disqualification of the subjects which made up the gross grade nine group. Thirty-four of the gross one hundred ten -- thirty-one per cent -- were disqualified because of drawing incompletion. Considering that "incompletion" is one of Machover's indices, which is supported by Royal's study (1949), one can find further evidence of suspected lack of heterogeneity in the Grade Nine Sample.

B. The Measures.

The D-O-W-S test measures were not examined for marker variability, which might seriously affect the validity of the measures.

Intelligence, being taken largely from measurement by the Laycock Mental Ability Test, sustains the limitations of that test. Critical comment of the test, such as that in O. K. Buros's The Third Mental Measurements Yearbook, Rutgers University Press, New Jersey, 1949, has been disparaging.

C. The Spearman Rank Correlation Test.

The effect of the large number of ties in the scores of the D-O-W-S test measures and the use of the correction factor might have been to excessively shrink the correlation coefficients which were obtained.

D. Test Administration Differences.

The differences in the methods of administration of the D-O-W-S test to the Delinquent Sample, which was individually and to an extent as a power test, in comparison to the Non-delinquent Sample, which

was as a group speeded test, may have been a contaminating factor in interpreting the differences found in the drawings done by subjects of the two samples. Moreover, the use of different examiners in testing these two samples might have introduced a contaminating factor of differences in subject-examiner rapport. Also, the use of different sets of administration instructions might have effected a serious difference in the motivation of the samples.

CHAPTER VII

RECOMMENDATIONS

A. Application.

Because of the success of some of its measures in differentiating between groups of children differing in adjustment, the D-O-W-S test in its present form might be employed in the making of group comparisons of level of general adjustment. The school administrator might use the test to compare the problem-raising potential of different classrooms of students as an aid in making teacher assignments or in allocating guidance attention. A similar use might be made of the test for a comparison of schools within a school system in the process of making teacher, principal, or supervisor assignments.

In a department of welfare setting, the test might be used to compare the level of general adjustment of the case loads of different workers, with the view of allocating supervisory attention or special services.

B. Revisions of the D-O-W-S Test Indicated by the Results of the Present Study.

Because of their failure to differentiate between either of the adjustment groups, Drawn Anxiety and Drawn Head Sizes might be no longer considered as individual measures. The indices of Drawn Anxiety could continue to be considered within the group of indices which determine Drawn Adjustment.

C. Research Revision of the D-O-W-S Test and its Measures.

Towards improving the validity and effectiveness of the D-O-W-S test, several research approaches have heuristic value.

(1) A study of internal consistency, such as a split-half reliability study.

(2) A validity study evaluating the individual indices or the pages of the test booklet.

(3) An inter-marker reliability study, which would evaluate the present description of each index.

(4) An intra-marker reliability study, which would also evaluate the descriptions of the indices.

D. Research Extension of the Present Study.

Towards testing the conclusions of the present study with regard to the validity of the D-O-W-S test measures, studies such as the following might be conducted.

(1) Comparisons of subject performance on the D-O-W-S test with information from established psychological assessment techniques, such as the structured interview.

(2) A predictive study.

(3) A test-retest reliability study of subject performance.

(4) More extensive and intensive examinations for influences in subject performance of developmental differences, differences in socio-economic status, sex differences, and intelligence.

(5) A study which investigated means of reducing the rate of disqualification of subjects, perhaps by altering the administration instructions, the design of the D-O-W-S test, or the size and composition of the subject groups.

(6) A further D-O-W-S test study of delinquent and non-delinquent groups using identical administration procedures and involving many supplementary psychological and other measures, which would give information regarding the validity and intercorrelations of the measures.

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APPENDIX

Section — Page

I. Sample D-O-W-S Test Booklet. A1

II. Administration Instructions

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B. The Junior High School Sample A7

C. The Delinquent Sample. A9

III. Socio-economic Status Classification. A11

IV. Tables of Statistical Data A12

DRAWING SURVEY

D-O-W-S: Form W-60

You are asked to make four drawings. Will you show us what you can do? Wait until you are told to start.

Please fill in this information first:

YOUR NAME: _____

GRADE: _____ SCHOOL: _____

YOUR AGE AT LAST BIRTHDAY: ____ THE MONTH YOUR BIRTHDAY COMES IN: _____

HEIGHT: ____ft. _____in. WEIGHT: _____lb.

THE SUBJECT YOU HAVE LIKED BEST IN SCHOOL: _____

THE SUBJECT YOU HAVE LIKED LEAST IN SCHOOL: _____

WHICH THREE STUDENTS IN YOUR ROOM WOULD YOU PICK AS FRIENDS TO SIT NEAR YOU IN CLASS:

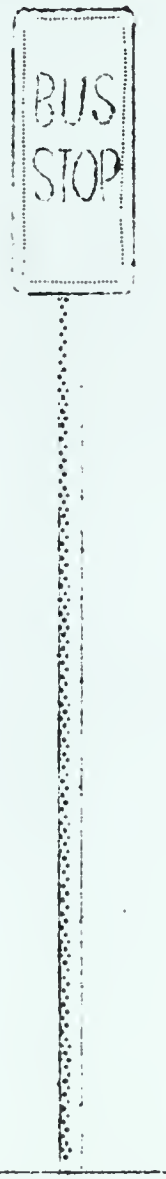
_____

_____

_____

Please give both their first and last names.

1. Draw a boy, yourself, and a girl, all standing waiting at a bus stop. Show yourself carrying a small box.



A2

Now, mark an X under the figure that you have drawn as yourself.

2. Draw <u>yourself</u> and <u>a friend</u> going to a party. Put some money in <u>your</u> hand.

A3

Now, mark an <u>X</u> under the figure that you have drawn as yourself.

3. Draw a teacher talking to you and another student at your school. Show yourself carrying a book under your arm.

Now, mark an X under the figure that you have drawn as yourself.

4. Draw a policeman talking to you and a friend about being careless while crossing the street.

Draw a badge on the policeman and an apple in your hand.

YOUR
NAME: _____

GRADE: _____

SCHOOL: _____

Now, mark an X under the figure that you have drawn as yourself.

Appendix

Section II

Administration Instructions for the D-O-W-S Test

A. The Grade Three Sample and the Grade Five Sample

TO THE EXAMINER: AFTER HANDING OUT THE TEST BOOKLETS AND SEEING THAT EACH SUBJECT HAS A PENCIL, SAY:

Today, we are going to do some drawing of a special kind. Let's look at the front of your pink booklet. This is called a Drawing Survey. Do you see the empty space where your name is to go? Right here. Please print your name in that space, and in the spaces on the next line print the number of your grade and the name of your school. (PAUSE) Have you that done, Your name goes in the first long space, then in the next small space goes the number of your grade, and then the name of your school in the next space. We will not worry about the other spaces on this page. Let's look inside.

See, the first white page has the number 1 in a circle and the picture of a bus stop sign. On this page I want you to draw a boy, yourself, and a girl all standing waiting at the bus stop. You are to draw three people -- a boy, yourself, and a girl. (PAUSE.) You may start. (AFTER TWO MINUTES HAVE ELAPSED, SAY:) Are you doing your best work, When you draw yourself, would you draw a small box in your hand. Please start drawing on each of the people in your drawing before you finish up one person very much. (AFTER ANOTHER TWO MINUTES, SAY:) Have you made a beginning on all three of the people in this drawing? Would you mark an X under the person you have drawn as yourself. Put an X under the person that is you and, as well, draw a small box in your hand. (AFTER TWO MINUTES, SAY:) I want you to stop work on this page now. It isn't necessary to finish up everything. You may have some time to come back later and work on this page some more.

Please turn to the next page. Does it have a number 2 in a circle? (PAUSE) Here you are to draw just two people: yourself and a friend going to a party. You are to show some money in your hand. You may begin. (AFTER TWO MINUTES, SAY:) Are you doing your best work? Please make a start on each of the people here, before you spend too much time working on just one. (AFTER FOUR MINUTES, SAY:) Have you shown two people going to a party, and have you shown some money in your hand? Now mark an X under the person that is yourself. I want you to stop work on this page now. Perhaps you can come back and finish it later.

Look at the next page. Is there a circle with the number 3 in it? (PAUSE) On this page you are asked to draw a teacher talking to you and another student. You are to draw three people: a teacher, yourself, and another student at your school. All right, begin. (AFTER

TWO MINUTES, SAY:) Will you draw a book under the arm of the person that is yourself, and then mark an X under the same person -- yourself. Have you made a beginning on each of the three persons you are to draw on this page? It isn't necessary to finish up everything really well: we want you to try to do each of the drawings. (AFTER TWO MINUTES, SAY:) Have you drawn at least a little of the three people on this page; have you drawn a book under your arm; have you marked an X under yourself? Let's stop work on this page now and turn to the last page.

The last page should have a number 4 in a circle. On this page you are to draw a policeman talking to you and a friend about being careless while crossing the street. You are to draw three people -- a policeman, yourself, and a friend. Would you draw a badge on the policeman, and an apple in your hand. (AFTER TWO MINUTES, SAY:) Have you remembered to make a small start on all three people here? Be sure to put a badge on the policeman and an apple in your hand. Now mark an X under the person you have drawn as yourself. If you finish this page, you may go back to the other pages and do more drawing on them.

(AFTER ABOUT FOUR MINUTES, SAY:) I want to stop you working now. It isn't important to have finished up everything really well. We want you to have tried your best and to have made at least a small beginning on each of the people on the four pages. Let's look at page one again. It has a bus stop sign and a circle with number 1 in it. Did you draw three people on this page? You should have drawn a boy, and yourself, and a girl. On page two, you should have drawn just two people. (PAUSE.) On page three (PAUSE) you should have drawn three people: a teacher, yourself, and another student. (PAUSE.) On the last page you should have drawn a policeman, and yourself, and a friend. Let's stop now.

Would you print your name on the last page, at the bottom, here. Print the number of your grade and the name of your school, too.

Thank you for being careful to follow the instructions so well. Bring in your booklet when you are ready.

(AS THE BOOKLETS ARE BEING TURNED IN, COULD YOU CHECK TO SEE THAT THE IDENTIFYING DATA HAVE BEEN GIVEN.)

B. The Junior High School Sample

TO THE EXAMINER: AFTER HANDING OUT THE TEST BOOKLETS AND SEEING THAT EACH SUBJECT HAS A PENCIL, SAY:

During this period we are going to do something special. Our class has been picked to be one of several in the city to participate in a drawing survey, among students of about your age. You will be asked

to draw on four pages of this Drawing Survey booklet. But first, let's fill in the information that is requested here on the pink cover. (GIVE ANY HELP THAT IS NEEDED HERE. IF THEY DO NOT KNOW THEIR WEIGHTS AND HEIGHTS, HAVE THEM LEAVE THE SPACES BLANK.) Who need more time before we start? This is a drawing survey to see how people of your age draw. It is not a test which will affect your marks. We want you to do your best, however, because your drawings will be compared to the drawings done by students at other schools. Who are not ready?

Now, will you open your booklet at page one. It should have a drawing of a bus stop sign. You are to draw a boy, yourself, and a girl -- three people, all standing waiting at a bus stop. You may start. (AFTER TWO MINUTES, SAY:) You should be working quickly. Please make a start on all three of the people on this page before you finish up any one completely. Make at least a start on all three of the people. Notice that you are to draw a small box in the hand of the person you have drawn as yourself, and also to mark an X under it. (AFTER TWO MINUTES, SAY:) You should have drawn at least a little of each of the three people on this page. Have you shown yourself carrying a small box, and drawn an X under the person you have drawn as yourself? Do not begin page two yet; wait until I give the instructions to start. (AFTER TWO MINUTES, SAY:) Would you stop work on this page now. You may have some time to come back later and work on this page some more.

Please turn to page two. On page two you are to draw just two people: yourself and a friend, going to a party. You are to show some money in your hand and again to mark an X under the person you draw as yourself. You may begin. (AFTER TWO MINUTES, SAY:) You are to work quickly, yet carefully. Please make at least a beginning on both of the people on this page before finishing up any one very completely. Don't forget the money and the X. (AFTER FOUR MINUTES, SAY:) I want you to stop work on this page now. Perhaps you can come back later and work on it.

On page three, (PAUSE) you are to draw three persons: a teacher, yourself, and another student. Draw a teacher talking to you and another student at your school. Show yourself carrying a book under your arm. You may begin. (AFTER TWO MINUTES, SAY:) Be sure to make a start on all three of the people on this page before spending too much time on any one. Don't forget to draw a book under your arm and to mark an X under yourself. (AFTER FOUR MINUTES, SAY:) Would you stop work on this page now. You should have made at least a beginning on all three of the people here.

Turn to the last page now, please. Here you are to draw three figures. You are to draw a policeman talking to you and a friend about being careless while crossing the street. Draw a badge on the policeman and an apple in your hand. Begin. AFTER TWO MINUTES, SAY:) You should have made at least a start on all three of the people on this page. Don't complete one person to too great an extent before starting

on all three. Be sure to draw a badge on the policeman. Show an apple in your hand and put an X under yourself. Use any time that you have left to go back and touch up any of the other pages. (AFTER FOUR MINUTES, SAY:) I want you to stop now. Please go back over your booklet and see that you have put X's under all the figures you have drawn as yourself. Check to see that you have drawn in the box, the money, the book, the badge, and the apple. Would you look at the pink cover to see that you have not forgotten to give all the information that was requested. Would you print your name, grade, and school again on page four. Thank you. Bring in your booklet when you are ready.

(AS THE BOOKLETS ARE BEING HANDED IN, COULD YOU CHECK TO SEE THAT MOST OF THE INFORMATION ON THE COVER HAS BEEN GIVEN.)

C. The Delinquent Sample

TO THE EXAMINER: WOULD YOU KEEP THE FOLLOWING POINTS IN MIND.

1. THIS IS NOT A TEST, BUT A SURVEY. YOU MAY MOTIVATE THE SUBJECTS BY SAYING SOMETHING LIKE THIS:

Would you like to find out what ability you have in art? You may be surprised to find out what you can do. This is a drawing survey that other people of your age are doing too. You are asked to draw on four pages and these will be studied by an art teacher.

2. THE SUBJECTS WORK AT THEIR OWN SPEED: THE AVERAGE TOTAL TIME SHOULD BE AROUND THIRTY MINUTES. MORE OR LESS DOES NOT MATTER.

3. IT IS IMPORTANT THAT THE SUBJECTS WORK ON EVERY PAGE. YOU MIGHT TELL THE SUBJECTS:

Please work quickly and follow instructions. I want you to work on each of the four pages. Try, at least, to do a little on each of the people that you are asked to draw. Notice on page one that you are asked to draw three people: a boy, yourself, and a girl all standing waiting at a bus stop. Then on page two you are to draw just two people: yourself and a friend going to a party. On pages three and four you are to draw three people again. Please make at least a beginning on all the people, rather than spend time on just one.

4. IF THEY COMPLAIN THAT THEY CAN'T DRAW, ENCOURAGE THE SUBJECTS BY SAYING:

It isn't necessary to draw well. This survey will tell us how you draw and may show that you have some undeveloped ability in art.

IF THE SUBJECTS ASK IF THEY MAY DRAW "STICK" MEN OR JUST THE FACES, SAY:

Oh, try to do a little better than that. The more you draw on these pages, the more will we be able to judge your drawing.

5. HAVE THE SUBJECTS FILL IN THE IDENTIFYING DATA ON THE COVER. IF THEY DO NOT KNOW THEIR HEIGHTS AND WEIGHTS HAVE THEM MAKE A GUESS.

6. YOU MIGHT START EACH SUBJECT THIS WAY:

Now you can do some drawing. Look at page one. Here you are to draw a boy, yourself, and a girl -- three people -- all standing waiting at a bus stop. Then you are to draw yourself carrying a small box, and later you are to mark an X under the figure you have drawn as yourself. All right? You may begin, and when you are finished on this page go onto the others. Be sure to follow the instructions carefully. Make at least a small beginning on each of the people on the pages. When you finish you can touch up your drawings in any way you would like. I will be back after a while.

7. WHEN THE SUBJECT SAYS THAT HE IS FINISHED, WOULD YOU CHECK TO SEE THAT HE HAS FOLLOWED INSTRUCTIONS, PERHAPS BY SAYING:

Are you finished? Let's see if you included everything. Did you mark an X on all four of the pages, under the figures that you had drawn as yourself? Have you shown a small box, the money, a book, a badge, and an apple on the pages where they should be? Did you leave any person out? There should be three people on page one, two on page two, three on page three, and three on the last page. All right? Would you check that you have given all the information that was requested on the cover. Thank you very much.

8. AFTER THE BOOKLETS ARE IN WOULD YOU CHECK THE COVER FOR INCOMPLETIONS. WOULD YOU FILL IN ANYTHING THAT IS MISSING. MAKE A GUESS AT THE HEIGHTS AND WEIGHTS, IF NECESSARY. WOULD YOU PUT YOUR INITIALS IN A CORNER OF THE COVER, PLEASE. THANKS.

Appendix

Section III

Socio-economic Classification

The following occupations are those listed on the cumulative record cards for each subject in the School M Sample and the School W Sample, according to the placement of the families at levels of socio-economic status. Trailing numbers denote the frequency above one of the occupation.

Upper Level. Assistant store manager; banker; civil servant and (mother) teacher (2); credit manager; dentist (2); engineer (8); lawyer (2); manager (5); school board secretary and (mother) teacher; supervisor.

Middle Level. Accountant (3); aircraft fitter; apartment owner; assistant department manager; cabinet maker; carpenter and (mother) dressmaker; C. N. R; construction; C. P. R; C. P. R. clerk; electrician; estimater; fireman; flying instructor; gas inspector; insurance agent (2); jeweller; lab technician; machinist (2); meat cutter; meteorologist; minister; photographer; pilot (3); pipe fitter; plasterer; pricer; printer; salesman (9); store clerk; (mother) teacher; veterinarian; warehouse; warehouse superintendent.

Lower Level. Auto painter; factory worker; farmer, gardener; laborer (2); maintenance; mechanic (2); truck driver; (mother) waitress; welfare case (2).

Appendix

Section IV

Tables of Statistical Data

Table A. Distributions and Cumulative Percentages of the Samples with Regard to Drawn Adjustment.

X	Del.* f	Del.* Cum.	Non. f	Non. Cum.	Tro. f	Tro. Cum.	Nor. f	Nor. Cum.	Jun. f	Jun. Cum.	Sch. M f	Sch. M Cum.	Sch. W f	Sch. W Cum.
100-99			11	100	7	100	43	100	50	100	9	100	18	100
98-97	3	100	6	56.0	14	84.8	23	59.0	37	66.7	4	57.2	17	66.7
96-95	4	88.0	6	32.0	12	54.4	23	37.1	35	42.5	5	35.1	11	35.2
94-93	4	72.0		8.0	6	28.1	11	15.2	17	19.2	1	14.3	5	14.6
92-91	5	56.0		8.0	3	15.2	5	4.2	8	7.9	1	9.5	3	5.6
90-89	3	36.0	1	8.0	2	8.7			2	2.6		4.8		
88-87	5	24.0		4.0	1	4.4			1	1.3	1	4.8		
86-85		24.0		4.0		2.2				1.3				
84-83	1	4.0	1	4.0	1	2.2			1	0.6				
N	25		25		46		105		151		21		54	

X	III f	III Cum.	V f	V Cum.	VII f	VII Cum.	IX f	IX Cum.	Del.G f	Del.G Cum.	Del.B f	Del.B Cum.
100-99	12	100	21	100	19	100	21	100				
98-97	31	82.8	30	67.2	36	74.7	32	72.4	1	100	2	100
96-95	19	38.6	11	20.3	11	21.7	11	30.3		88.9	4	87.4
94-93	7	11.4	2	3.1	4	12.0	6	15.8	1	88.9	3	62.5
92-91	1	4.3			2	6.7	1	7.9	2	77.8	3	43.8
90-89					1	4.0	3	6.6	2	55.6	1	25.0
88-87						2.7		2.6	3	33.3	2	18.8
86-85					1	2.7	2	2.6				6.3
84-83					1	1.3					1	6.3
N	70		64		75		76		9		16	

X	Non.G f	Non.G Cum.	Non.B f	Non.B Cum.	Tro.G f	Tro.G Cum.	Tro.B f	Tro.B Cum.
100-99	5	100	6	100	5	100	4	100
98-97	1	44.4	5	62.5	3	72.2	9	85.8
96-95	1	33.3	5	31.2	5	55.6	7	53.6
94-93		22.2			3	27.8	3	28.6
92-91	1	22.2			1	11.1	2	17.9
90-89		11.1				5.6	2	10.7
88-87		11.1				5.6	1	3.6
86-85		11.1				5.6		
84-83	1	11.1			1	5.6		
N	9		16		18		28	

* Del.: the Delinquent Sample
Non.: the Non-delinquent Sample
Tro.: the Troubled Adjustment Sample
Nor.: the Normal Adjustment Sample
Jun.: the Junior High School Sample
Dis.: the Disqualified Junior High School Sample
Sch.M: the School M Sample
Sch.W: the School W Sample
V: the Grade Five Sample
VII; the Grade Seven Sample
IX: the Grade Nine Sample
Del.G: the Delinquent Girls Sample
Del.B: the Delinquent Boys Sample
Non.G: the Non-delinquent Girls Sample
Non.B: the Non-delinquent Boys Sample
Tro.G: the Troubled Girls Sample
Tro.B: the Troubled Boys Sample

Table B. Distributions and Cumulative Percentages of the Samples with Regard to Drawn Aggression.

X	Del. f	Del. Cum.	Non. f	Non. Cum.	Tro. f	Tro. Cum.	Nor. f	Nor. Cum.	Jun. f	Jun. Cum.	Sch.M f	Sch.M Cum	Sch.W f	Sch.W Cum.
9	2	100												
8	1	92.0												
7	2	88.0												
6	3	80.0			1	100	2	100	3	100			2	100
5	2	68.0	1	100	3	97.8	2	98.0	5	98.0	1	100		96.3
4	4	60.0		96.0	6	91.3	10	96.1	16	94.0	2	95.1	2	96.3
3	6	44.0	1	96.0	5	78.2	5	86.7	11	84.7	1	85.6	5	92.5
2	2	20.0	1	92.0	6	67.5	9	82.0	15	72.5	1	80.8	4	83.3
1	2	12.0	4	88.0	6	54.4	11	73.3	17	67.6	3	76.2	8	75.8
0	1	4.0	18	72.0	19	41.3	66	63.0	85	56.3	13	61.8	33	61.2
N	25		25		46		105		151		21		54	

X	III f	III Cum.	V f	V Cum.	VII f	VII Cum.	IX f	IX Cum.	Del.G. f	Del.G. Cum.	Del.B. f	Del.B. Cum.
9									2	100		
8			1	100						77.8	1	100
7	2	100	1	98.4					1	77.8	1	93.6
6		97.1	3	96.8	2	100	1	100	2	66.7	1	87.5
5	1	97.1	3	92.1	1	98.2	3	98.7		44.4	2	81.2
4	10	95.7	9	87.5	4	96.0	13	94.7	1	44.4	3	68.7
3	2	81.4	3	73.5	6	91.1	4	77.7	3	33.3	3	50.0
2	1	78.6	6	68.7	5	82.6	10	72.5			2	31.2
1	3	77.2	8	59.3	11	76.0	6	59.2			2	18.8
0	51	72.8	30	46.9	46	61.2	39	51.2			1	6.3
N	70		64		75		76		9		16	

X	Non.G f	Non.G Cum.	Non.B f	Non.B Cum.	Tro.G f	Tro.G Cum.	Tro.B f	Tro.B Cum.
9								
8								
7								
6							1	100
5	1	100			1	100	2	96.4
4		88.9			2	94.4	5	89.4
3		88.9	1	100	2	83.4	3	71.4
2		88.9	1	93.6	1	72.2	4	60.7
1		88.9	4	87.5	3	66.7	3	46.5
0	8	88.9	10	62.5	9	50.0	10	35.7
N	9		16		18		28	

Table C. Distributions and Cumulative Percentages of the Samples with Regard to Drawn Anxiety.

X	Del. f	Del. Cum.	Non. f	Non. Cum.	Tro. f	Tro. Cum.	Nor. f	Nor. Cum.	Jun. f	Jun. Cum.	Sch.M f	Sch.M Cum.	Sch.W f	Sch.W Cum.
9			1	100	1	100			1	100				
8				96.0		98.0				99.4				
7	1	100		96.0		98.0				99.4				
6	1	96.0		96.0	2	98.0			2	99.4	1	100		
5	2	92.0	1	96.0	1	93.5	8	100	9	98.0	1	95.1	2	100
4	4	84.0	4	92.0	5	91.3	10	92.4	15	92.0	1	90.5	6	96.2
3	3	68.0	4	76.0	6	80.5	10	82.8	16	82.1	2	85.7	8	83.3
2	2	56.0	6	60.0	2	67.4	8	73.4	10	71.5	2	76.2	3	68.2
1	2	48.0	6	56.0	11	63.0	22	65.7	33	64.8	6	66.7	13	63.0
0	10	40.0	8	32.0	18	39.2	47	44.8	65	43.0	8	38.2	21	38.9
N	25		25		46		105		151		21		54	

X	III f	III Cum.	V f	V Cum.	VII f	VII Cum.	IX f	IX Cum.	Del.G f	Del.G Cum.	Del.B. f	Del.B. Cum.
9	1	100					1	100				
8	1	98.6						98.5				
7	3	97.6	1	100				98.5	1	100		
6	5	92.8	4	98.5	1	100	1	98.5	1	88.9		
5	1	85.7	1	92.2	3	98.6	1	97.3	1	77.8	1	100
4	15	84.2	1	87.5	8	94.8	7	96.0	1	66.7	3	93.8
3	6	62.8	8	85.8	10	84.1	6	87.0	1	55.6	2	75.0
2	10	50.6	8	73.2	5	70.7	5	79.0		44.4	2	62.5
1	8	40.0	11	61.8	19	64.0	14	72.4		44.4	2	50.0
0	20	28.6	28	43.7	29	37.7	41	54.0	4	44.4	6	37.5
N	70		64		75		76		9		16	

X	Non.G. f	Non.G. Cum.	Non.B. f	Non.B. Cum.	Tro.G. f	Tro.G. Cum.	Tro.B f	Tro.B Cum.
9	1	100			1	100		
8		88.9				94.4		
7		88.9				94.4		
6		88.9			1	94.4	1	100
5	1	88.9			1	88.8		93.2
4	1	77.8	3	100	1	83.4	4	93.2
3	1	66.7	3	81.2	1	77.8	5	82.1
2		55.6	1	62.5	1	72.2	1	64.3
1	1	55.6	5	56.3	5	66.7	6	60.7
0	4	44.4	4	25.0	7	43.7	11	39.3
N	9		16		18		28	

Table D. Distributions and Cumulative Percentages of the Samples with Regard to Drawn Paranoid State.

X	Del. f	Del. Cum.	Non. f	Non. Cum.	Tro. f	Tro. Cum.	Nor. f	Nor. Cum.	Jun. f	Jun. Cum.	Sch.M f	Sch.M Cum.	Sch. W f	Sch. W Cum.
4	7	100	1	100	4	100	9	100	13	100	1	100	3	100
3	2	72.0		96.0	5	91.3	6	91.3	11	91.2	2	94.8	2	94.4
2	3	64.0	1	96.0	5	80.4	5	85.6	10	84.0		85.5	2	90.6
1	4	52.0		92.0	2	69.6	1	81.0	3	77.4	1	85.5	1	87.0
0	9	36.0	23	92.0	30	65.1	84	80.2	114	75.4	17	80.8	46	85.2
N	25		25		46		105		151		21		54	

X	III f	III Cum.	V f	V Cum.	VII f	VII Cum.	IX f	IX Cum.	Del.G. f	Del.G. Cum.	Del.B. f	Del.B. Cum.
4			1	100	4	100	7	100	2	100	5	100
3	1	100	3	99.4	4	94.7	9	90.8	1	77.8	1	68.8
2		96.7	2	93.8	2	89.3	8	78.8		66.7	3	62.5
1	2	96.7	1	90.8	2	86.8	1	68.2		66.7	4	43.8
0	67	94.4	57	89.0	63	84.0	51	67.0	6	66.7	3	18.8
N	70		64		75		76		9		16	

X	Non.G. f	Non.G. Cum.	Non.B. f	Non.B. Cum.	Tro.G. f	Tro.G. Cum.	Tro.B. f	Tro.B. Cum.
4	1	100			1	100		
3		88.9			2	94.4	6	100
2	1	88.9			2	83.3	3	77.6
1		77.8			1	72.1	1	67.8
0	7	77.8	16	100	12	66.7	18	64.3
N	9		16		18		28	

Table E. Distributions and Cumulative Percentages of the Samples With Regard to Drawn Self-Acceptance.

X	Del.		Non.		Tro.		Nor.		Jun.		Sch.M		Sch.W	
	f	Cum.	f	Cum.	f	Cum.	f	Cum.	f	Cum.	f	Cum.	f	Cum.
100							1	100	1	100			1	100
99							5	99.1	5	99.3			2	98.1
98	1	100	2	100	3	100	5	94.2	8	96.0	1	100	3	94.4
97		96.0	4	92.0	1	93.4	5	89.5	16	90.6	2	95.2	6	88.8
96	6	96.0	3	76.0	3	91.2	4	75.2	17	80.1	3	85.7	4	77.8
95	2	72.0	3	64.0	4	84.9	21	61.8	25	68.8	3	71.4	8	70.8
94	2	64.0	1	52.0	2	76.1	8	41.8	10	52.4	3	57.1	5	55.6
93	2	56.0	3	48.0	9	71.7	6	34.3	15	45.7	2	43.0	6	46.4
92	3	48.0	2	36.0	5	52.2	9	28.6	14	35.8	3	33.3	6	35.2
91	2	36.0		28.0		41.3	2	20.0	2	27.4		19.1	1	24.1
90		28.0	1	28.0	4	41.3	2	18.1	6	25.2		19.1	3	22.2
89		28.0		24.0	1	32.6	3	16.2	4	21.2	1	19.1		16.7
88	1	28.0	2	24.0	2	30.5	4	13.3	6	18.5	1	14.3	3	16.7
87	2	24.0		16.0		26.1	1	9.5	1	14.6		9.5	1	11.1
86		16.0		16.0	2	26.1	1	8.6	3	13.9	1	9.5	1	9.3
85		16.0	1	16.0		21.8	2	7.6	2	11.8		4.8	1	7.4
84		16.0		12.0	4	21.8		5.7	4	10.6	1	4.8		5.6
83		16.0	1	12.0		13.1	2	5.7	2	7.8				5.6
82		16.0		8.0	1	13.1		3.8	1	6.6				5.6
81	1	16.0		8.0	1	10.9		3.8	1	6.0				5.6
80		12.0		8.0	2	8.7		3.8	2	5.3				5.6
79	1	12.0		8.0		4.4		3.8		4.0				5.6
78		8.0	1	8.0		4.4	1	3.8	1	4.0			1	5.6
77		8.0		4.0		4.4		2.9		3.3				
76		8.0		4.0	1	4.4		2.9	1	3.3				
75		8.0		4.0		2.2		2.9		2.7				
74		8.0		4.0		2.2		2.9		2.7				
73		8.0		4.0		2.2		2.9		2.7				
72	1	8.0		4.0		2.2		2.9		2.7				
71		4.0		4.0		2.2		2.9		2.7				
70	1	4.0		4.0		2.2	1	2.9	1	2.7				
69				4.0		2.2		1.9		2.0				
68			1	4.0	1	2.2		1.9	1	2.0				
67								1.9		1.3				
66								1.9		1.3				
65								1.9		1.3				
64								1.9		1.3				
63								1.9		1.3				
62								1.9		1.3				
61							1	1.9	1	1.3				
60							1	.9		.7				
N	25		25		46		105		151		21		54	

Table E, Continued. Distributions and Cumulative Percentages of the Samples with Regard to Drawn Self-acceptance.

X	III		V		VII		IX		Del.G.		Del.B.	
	f	Cum.	f	Cum.	f	Cum.	f	Cum.	f	Cum.	f	Cum.
100			2	100	1	100						
99	1	100		96.9	2	98.7	3	100				
98	3	98.6	4	96.9	4	96.0	4	96.1	1	100		
97	5	95.7	9	90.8	8	91.0	8	90.8		88.9		
96	7	87.2	7	76.5	7	81.4	10	80.2	1	88.9	5	100
95	10	77.2	12	65.6	11	70.7	14	67.2	1	77.8	1	68.7
94	7	62.9	9	46.9	8	56.0	2	48.3	1	66.7	1	62.5
93	5	52.9	3	32.8	8	45.4	7	46.1	2	55.6		56.3
92	4	45.7	2	28.1	9	34.7	5	36.9	1	33.3	2	56.3
91	2	40.0	4	25.0	1	22.7	1	30.3		22.2	2	43.8
90	5	37.2	7	18.8	3	21.4	3	28.9		22.2		31.2
89	6	30.0	2	7.8	1	17.4	3	25.0		22.2		31.2
88	7	21.2	1	4.7	4	16.0	2	21.1		22.2	1	31.2
87	4	11.4	1	3.1	1	10.7		18.4	2	22.2		25.0
86	2	5.7		1.6	2	9.3	1	18.4				25.0
85		2.8	1	1.6	1	6.7	1	17.1				25.0
84	1	2.8			1	5.3	3	15.8				25.0
83		1.4				4.0	2	11.9				25.0
82		1.4				4.0	1	9.2				25.0
81	1	1.4				4.0	1	7.9			1	25.0
80						4.0	2	6.6				18.6
79						4.0		3.9			1	18.6
78					1	4.0		3.9				12.5
77						2.7		3.9				12.5
76						2.7	1	3.9				12.5
75						2.7		2.6				12.5
74						2.7		2.6				12.5
73						2.7		2.6				12.5
72						2.7		2.6			1	12.5
71						2.7		2.6				6.3
70						2.7	1	2.6			1	6.3
69						2.7		1.3				
68						2.7	1	1.3				
67						2.7						
66						2.7						
65						2.7						
64						2.7						
63						2.7						
62						2.7						
61					1	2.7						
60					1	1.3						
N	70		64		75		76		9		16	

Table E, Continued. Distributions and Cumulative Percentages of the Samples with Regard to Drawn Self-acceptance.

X	Non.G. f	Non.G. Cum.	Non.B. f	Non.B. Cum.	Tro.G. f	Tro.G. Cum.	Tro.B. f	Tro.B. Cum.
100								
99								
98	1	100	1	100	2	100	1	100
97	2	88.9	2	93.6		88.9	1	96.4
96		66.7	3	81.2	2	88.9	2	92.9
95	1	66.7	2	62.5		77.8	4	85.8
94	1	55.6		50.0		77.8	2	71.5
93		44.4	3	50.0	4	77.8	5	57.2
92	1	44.4	1	31.3	2	55.6	2	46.4
91		33.3		25.0		44.4		39.3
90		33.3	1	25.0	2	44.4	2	39.3
89		33.3		18.6		33.3	1	32.3
88	1	33.3	1	18.6	1	33.3	1	28.7
87		22.2		12.5		27.7		25.0
86		22.2		12.5	1	27.7	1	25.0
85	1	22.2		12.5		22.3		21.4
84		11.1	1	12.5	1	22.3	3	21.4
83		11.1		6.3		16.7		10.7
82		11.1		6.3	1	16.7		10.7
81		11.1		6.3	1	11.1		10.7
80		11.1		6.3		5.6	2	10.7
79		11.1		6.3		5.6		3.6
78		11.1	1	6.3		5.6		3.6
77		11.1				5.6		3.6
76		11.1				5.6	1	3.6
75		11.1				5.6		
74		11.1				5.6		
73		11.1				5.6		
72		11.1				5.6		
71		11.1				5.6		
70		11.1				5.6		
69		11.1				5.6		
68	1	11.1			1	5.6		
N	9		16		18		28	

Table F. Distributions and Cumulative Percentages of the Samples with Regard to Drawn Head Sizes.

X	Del.		Non.		Tro.		Nor.		Jun.		Sch.M		Sch. W	
	f	Cum.	f	Cum.	f	Cum.	f	Cum.	f	Cum.	f	Cum.	f	Cum.
360-379							1	100	1	100			1	100
340-359	1	100					1	99.8	1	99.8				99.5
320-339		99.0			1	100	1	99.5	2	99.6			1	99.5
300-319		99.0				99.3		99.3		99.3				99.0
280-299	1	99.0				99.3		99.3		99.3				99.0
260-279	1	98.0				99.3		99.3		99.3				99.0
240-259		97.0	1	100	1	99.3	1	99.3	2	99.3			1	99.0
220-239		97.0		99.0	3	98.8		99.0	3	99.2				98.5
200-219	1	97.0	1	99.0	2	97.3	4	99.0	6	98.3			2	98.5
180-199	1	96.0		98.0		96.2		98.0		97.4				97.6
160-179	1	95.0	3	98.0	4	96.2	5	98.0	9	97.4	2	100	4	97.6
140-159	8	94.0	4	95.0	12	94.1	15	96.9	27	95.9	5	97.7	9	95.8
120-139	18	86.0	11	91.0	24	86.4	55	93.3	79	91.5	13	91.7	27	91.6
100-119	42	68.0	40	80.0	72	74.5	217	80.3	289	76.8	40	76.2	115	79.1
80- 99	21	26.0	30	40.0	48	35.3	85	28.6	133	30.7	18	28.6	35	25.9
60- 79	5	5.0	10	10.0	13	9.2	32	8.3	45	8.6	6	7.2	20	9.7
40- 59					2	2.4	2	.8	4	1.2			1	.5
20- 39					2	1.2	1	.3	3	.5				
N	100		100		184		420		604		84		216	

Table F Continued.

X	III		V		VII		IX		Del.G.		Del.B.	
	f	Cum.	f	Cum.	f	Cum.	f	Cum.	f	Cum.	f	Cum.
360-379					1	100						
340-359					1	99.6					1	100
320-339						93.3	2	100				98.4
300-319						99.3		99.3				98.4
280-299						99.3		99.3			1	98.4
260-279						99.3		99.3			1	96.8
240-259					1	99.3	1	99.3				95.2
220-239						99.0	3	99.0				95.2
200-219					2	99.0	4	98.0			1	95.2
180-199	2	100				98.2		96.6			1	93.8
160-179	5	99.2	3	100	6	98.2	3	96.6			1	92.4
140-159	15	97.8	6	98.8	14	96.2	13	95.7	4	100	2	90.7
120-139	52	92.1	33	96.4	40	91.7	39	91.4	5	88.9	12	87.5
100-119	106	73.6	126	83.6	155	78.3	134	78.7	20	75.0	22	66.8
80- 99	74	35.7	68	34.4	53	26.7	80	34.6	3	19.1	19	33.4
60- 79	24	9.3	19	7.8	26	9.0	19	8.2	4	11.1	3	4.7
40- 59	2	.7	1	.4	1	.3	3	2.0				
20- 39							3	1.0				
N	280		256		300		304		36		64	

Table F, Continued.

X	Non.G. f	Non.G. Cum.	Non.B. f	Non.B. Cum.	Tro.G. f	Tro.G. Cum.	Tro.B. f	Tro.B. Cum.
320-339							1	100
300-319								99.1
280-299								99.1
260-279								99.1
240-259			1	100	1	100		99.1
220-239				98.4	1	98.6	2	99.1
200-219	1	100		98.4	1	97.1	2	98.2
180-199		97.2		98.4		95.9		96.3
160-179	2	97.2	1	98.4	3	95.9	1	96.3
140-159	1	91.7	3	96.9	6	91.7	7	95.5
120-139	3	87.8	6	92.2	9	83.4	19	88.1
100-119	15	80.5	25	82.9	26	70.8	44	72.0
80- 99	11	38.9	19	43.8	22	34.8	23	32.4
60- 79	3	8.5	9	14.1	2	4.2	12	11.7
40- 59					1	1.4	1	.9
N	36		64		72		112	

Table G. Samples with Regard to Ratings of Intelligence.

Samples	N	Mean	Standard Deviation	Standard Error of Difference Between the Means	Difference Between the Means	t	Sig.
Tro.	46	102.17	11.72	2.12	10.51	4.96	<.005
Nor.	105	112.68	12.72				
Non.	105	112.68	17.01	3.58	3.21	.89	>.20
Jun.	151	109.47	13.30				
Jun.	151	109.47	13.30	2.04	3.02	1.48	=.10
Dis.	60	106.45	13.37				
Sch. M	21	98.00	12.25	3.33	11.80	3.54	<.005
Sch. W	54	109.80	14.55				

Table H. The Distribution and Cumulative Percentages of Ages.

X	Del.		Non.		Tro.		Nor.		Jun.		Dis.	
	f	Cum.	f	Cum.	f	Cum.	f	Cum.	f	Cum.	f	Cum.
211-215											1	100
206-210												98.2
201-205					1	100	1	100	2	100	1	98.2
196-200					3	97.8	2	99.1	5	98.6	3	95.6
191-195	1	100			4	91.2	3	97.1	7	95.2	1	92.1
186-190	2	96.0	1	100	5	82.7	6	94.2	11	89.8	4	90.0
181-185	2	88.0	3	96.0	10	71.8	8	88.6	18	82.5	12	83.4
176-180	2	80.0	4	84.0	5	50.0	17	81.0	22	70.8	4	63.2
171-175	4	72.0	3	68.0	6	39.2	5	64.7	11	56.3	9	56.8
166-170	4	56.0	4	56.0	4	26.1	4	60.0	8	49.6	5	41.8
161-165	2	40.0		40.0	1	17.7	6	54.1	9	44.4	3	33.3
156-160	3	32.0	4	40.0	1	15.2	19	47.5	20	38.4	8	28.3
151-155	3	20.0	2	24.0	4	13.1	13	30.2	17	25.1	7	15.0
146-150		8.0	2	16.0	1	4.4	13	18.1	14	13.9	2	3.3
141-145	2	8.0	2	8.0	1	2.2	4	5.7	5	4.6		
136-140							2	1.9	2	1.3		
N	25		25		46		105		151		60	

Table I. The Distributions and Cumulative Percentages of Heights.

X	Del.		Non.		Tro.		Nor.		Jun.		Dis.	
	f	Cum.	f	Cum.	f	Cum.	f	Cum.	f	Cum.	f	Cum.
72-73	1	100					1	100	1	100		
70-71	1	96.0			2	100	1	99.1	3	99.2	2	100
68-69		92.0	2	100	4	95.6	3	98.2	7	97.2	4	96.6
66-67	3	92.0	3	92.0	6	86.9	13	95.2	19	92.8	6	90.0
64-65	2	80.0	6	80.0	10	73.9	21	82.8	31	80.0	13	80.0
62-63	9	72.0	6	56.0	14	52.2	16	62.8	30	59.7	13	58.2
60-61	8	36.0	4	32.0	5	21.7	18	47.6	23	39.7	15	36.7
58-59	1	4.0	3	16.0	5	10.9	16	30.4	21	24.4	5	11.7
56-57			1	4.0			10	15.2	10	10.6	2	3.3
54=55							6	5.7	6	4.0		
N	25		25		46		105		151		60	

Table J. The Distributions and Cumulative Percentages of Weights.

X	Del.		Non.		Tro.		Nor.		Jun.		Dis.	
	f	Cum.	f	Cum.	f	Cum.	f	Cum.	f	Cum.	f	Cum.
165-179					1	100	1	100	2	100	1	100
150-164						92.8	3	99.0	3	98.6	1	98.3
135-149	2	100	1	100	7	92.8	5	96.2	12	96.6	6	96.6
120-134	3	92.0	3	96.0	13	82.5	17	91.5	30	88.4	13	86.7
105-119	14	80.0	13	84.0	12	54.4	26	75.2	38	68.8	17	65.0
90-104	6	24.0	5	32.0	10	28.3	32	50.5	42	47.3	14	36.6
75- 89			3	12.0	3	6.5	15	20.0	18	15.9	7	13.3
60- 74							6	5.7	6	4.0	1	1.7
N	25		25		46		105		151		60	

Table K. Proportions of Samples According to Categories.

	Jun.	Non.	
Girls	74	9	83
Boys	77	16	93
	151	25	176

	Jun.	Non.	
In Grade Seven	75	12	87
In Grade Nine	76	13	89
	151	25	176

	Jun.	Dis.	
Girls	77	28	105
Boys	74	32	106
	151	60	211

	Jun.	Dis.	
In Grade Seven	75	27	102
In Grade Nine	76	33	109
	151	60	211

	Jun.	Dis.	
Rated as Troubled in Adjustment	46	25	71
Rated as Normal in Adjustment	105	35	140
	151	60	211

	Jun.	Dis.	
In School M	21	4	25
In School W	54	21	75
	75	25	100

	Sch. M	Sch. W	χ^2
Rated in Upper Socio-Economic Class	0 (5.88*)	21 (15.1)	5.88, 2.31
Rated in Middle Socio-economic Class	10 (11.4)	30 (28.8)	.17, .05
Rated in Lower Socio-economic Class	11 (3.9)	3 (10.1)	12.99, 4.90
			26.30

* Independence values

B29813